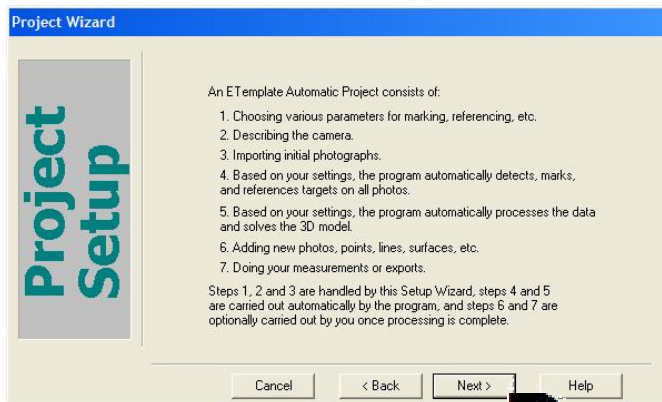
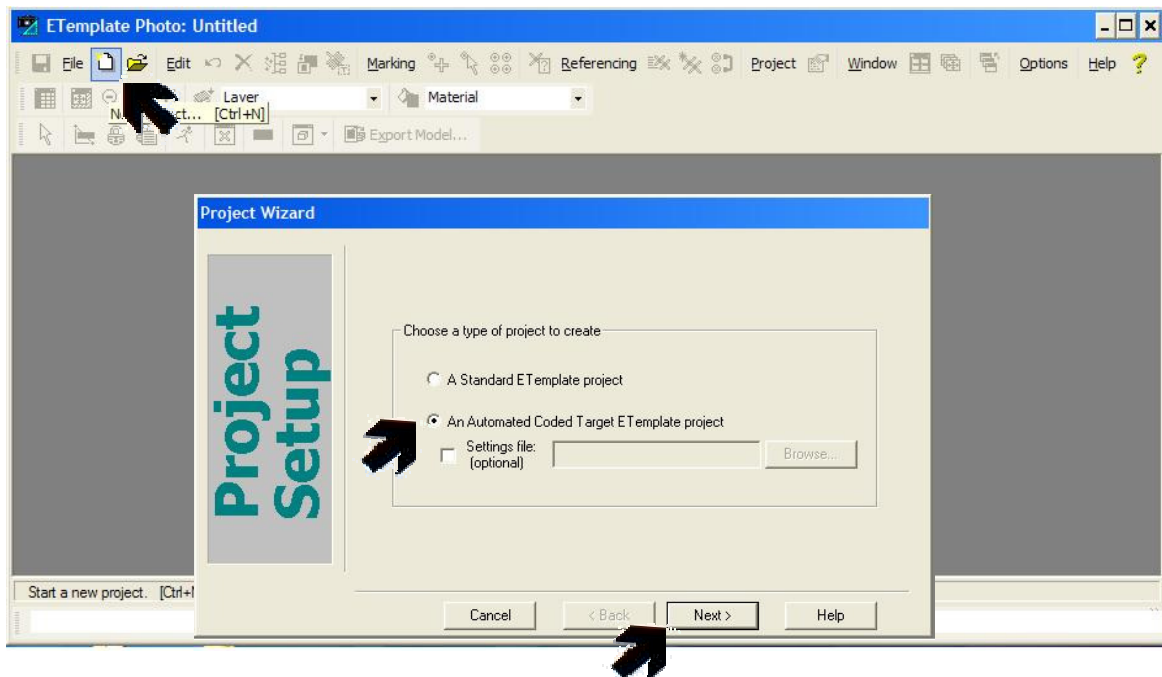
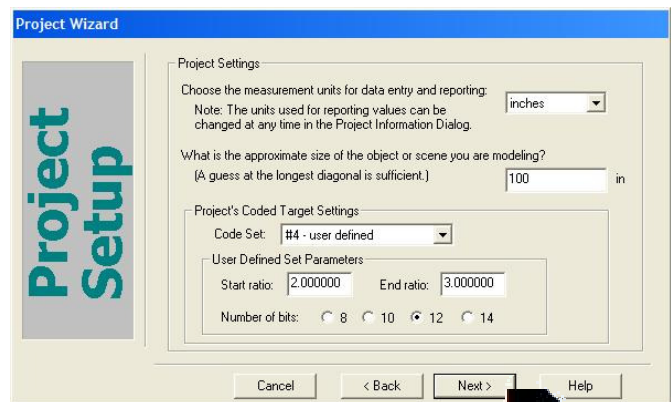


## STEPS FOR ETEMPLATE PHOTO Version 2.3 PROJECTS with CODED TARGETS

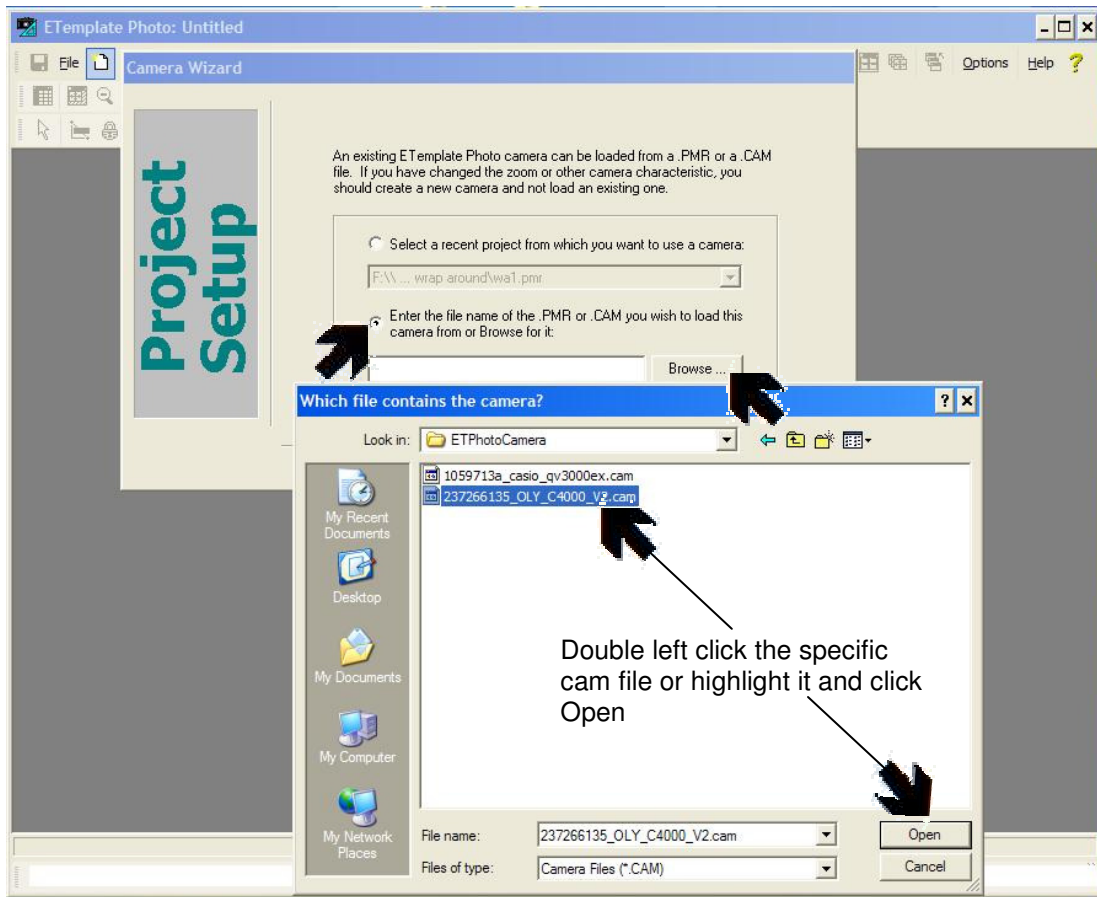
- **File / New Project** (Project Wizard / Project Setup)
- Select **An Automated Coded Target ETemplate project...Next**



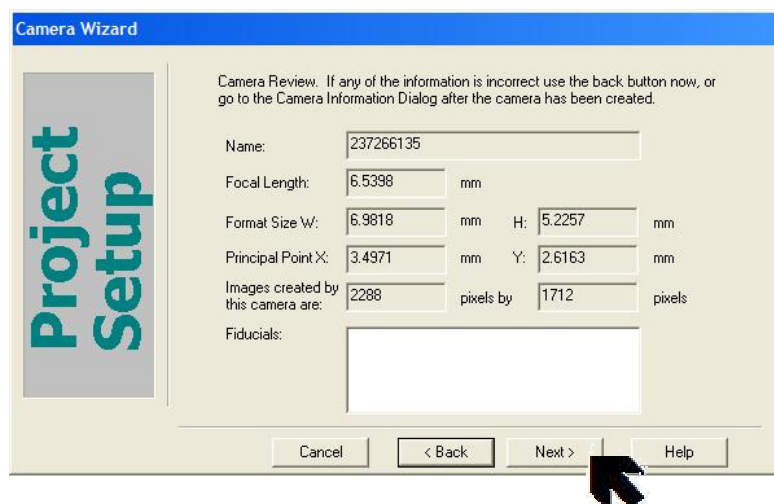
- Consists of...**Next**



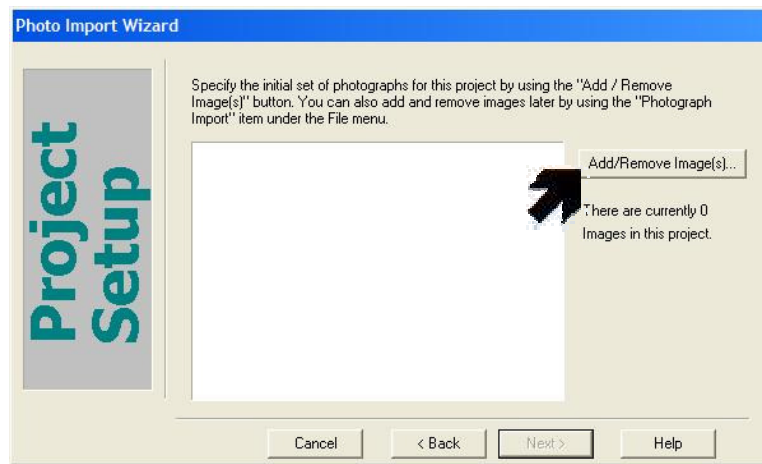
- Default Settings...**Next**



- To enter .cam or .pmr click **Browse** and navigate to the **.cam**, double left click it, and click **Next**

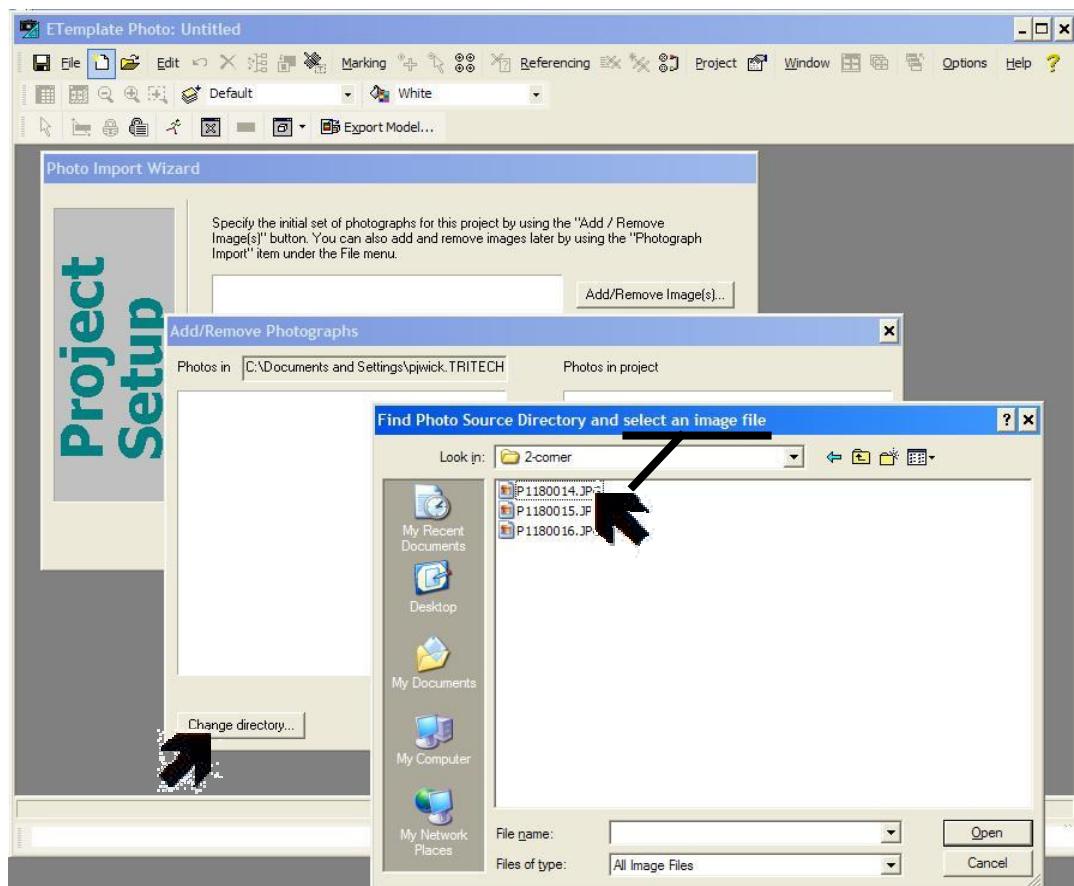
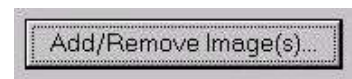


- Camera Review...**Next**

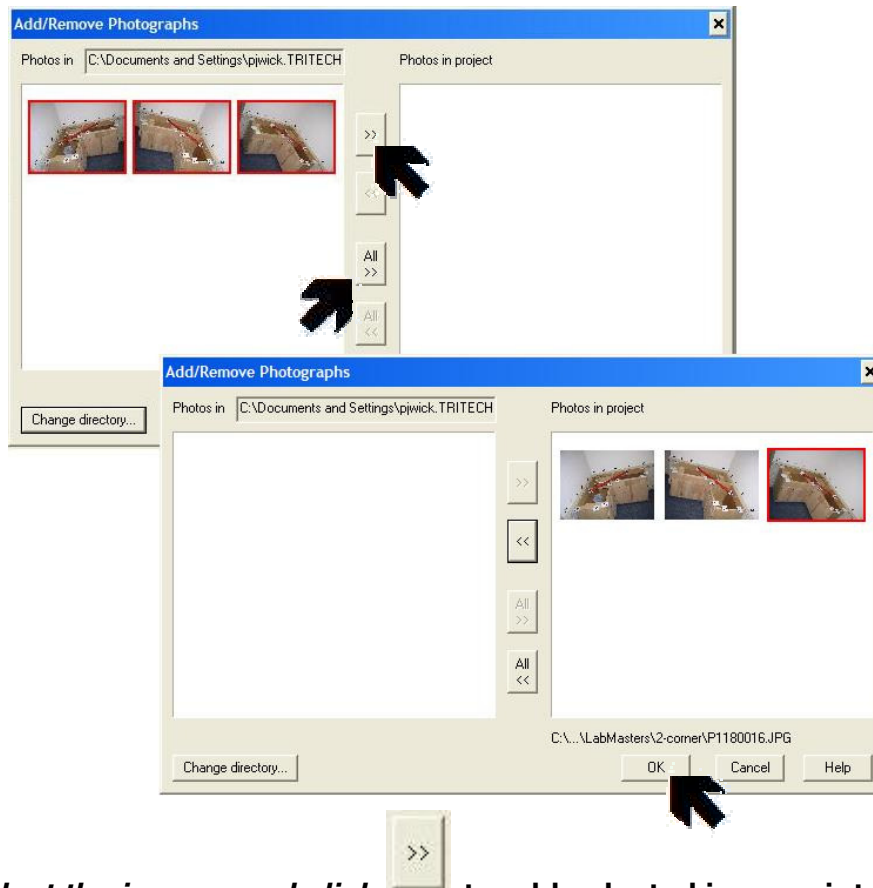


- Photo Import Wizard dialog box: specify initial set of photos...

Click Add/Remove Images button



- Add/Remove Photographs dialog box: click Change Directory button to find Photo Source Directory and Select an Image File by double left clicking it.



- *Select the images and click >> to add selected images into the project (or click ALL) | Click OK*

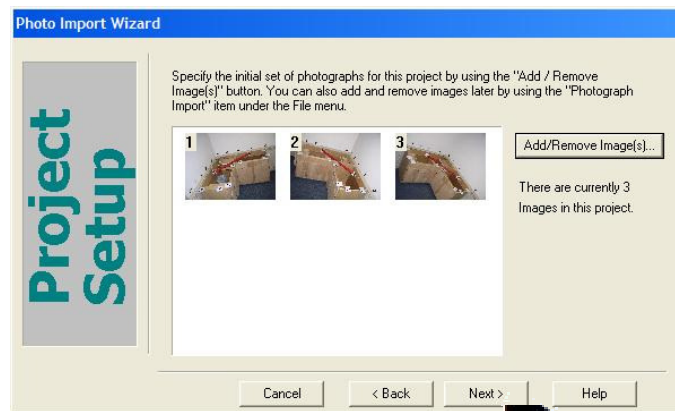
**TIP:            CHOOSE IMAGES CAREFULLY**

Choose and look for best images, meaning ones with overall largest number of placed markers, and best opposite angles of all markers.

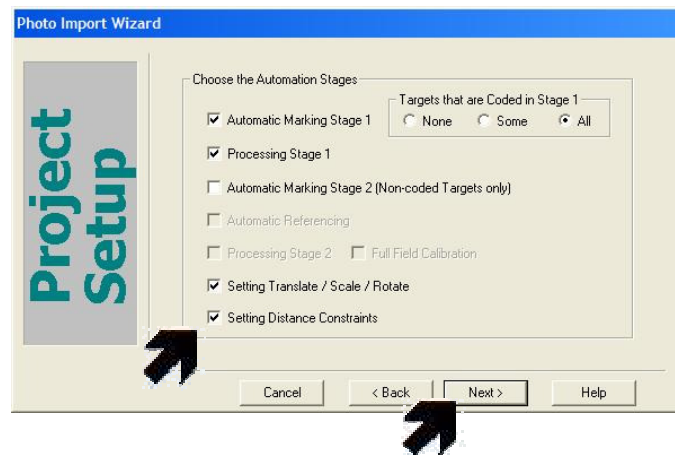
Remember, if Coded Targets are placed well and photos are shot taking the 6/1 Rule of Overlap into consideration, a well-chosen group of photos can be automatically processed quickly. Trying to process larger quantities of photos may result in time consuming manual marking, referencing, and processing. Too many unnecessary photos run through the wizard may require troubleshooting.

**6/1 RULE**

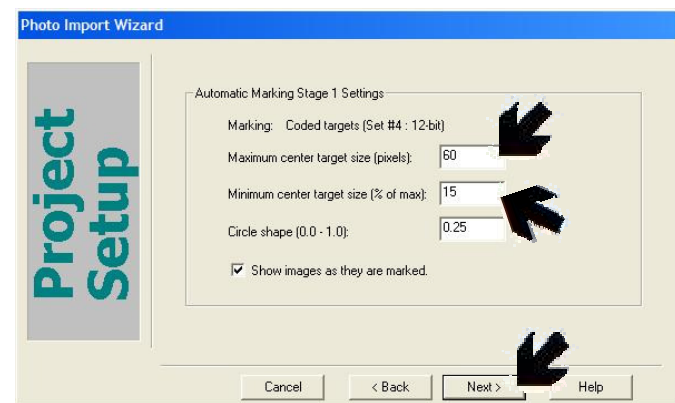
*There must be 6 or more points shared between each photo and one other photo, and 1 or more points shared between each photo and two other photos in order for all photos to become completely processed and oriented.*



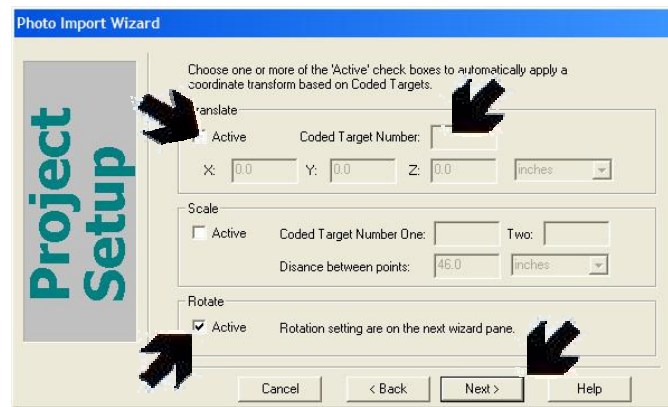
Click Next



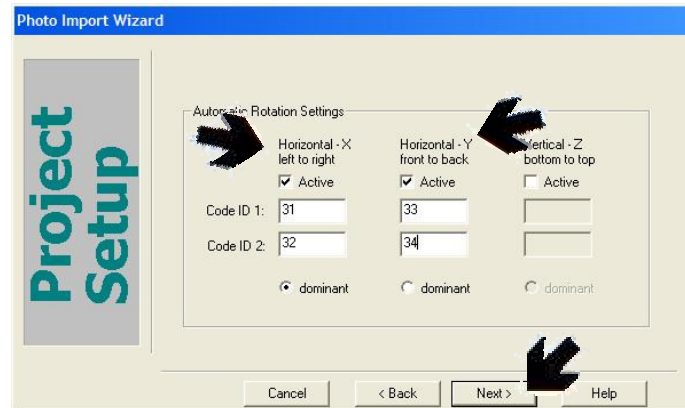
- Check Setting Distance Constraints
- Click Next



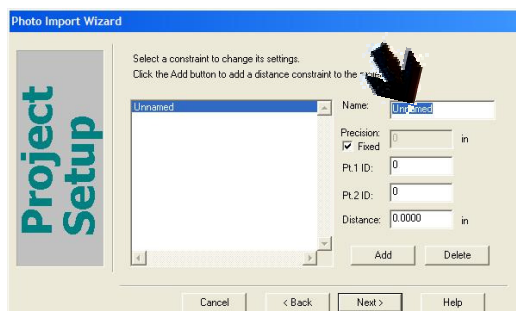
- Modify the Maximum center target size (pixels): to 60
- Modify the Minimum center target size (% of max): to 15
- Click Next



- Check Translate/Active – Enter X1 Edge Marker Code in Coded Target Number (keep X, Y, and Z values 0.0)
- Checkmark Rotate | Active
- Click Next



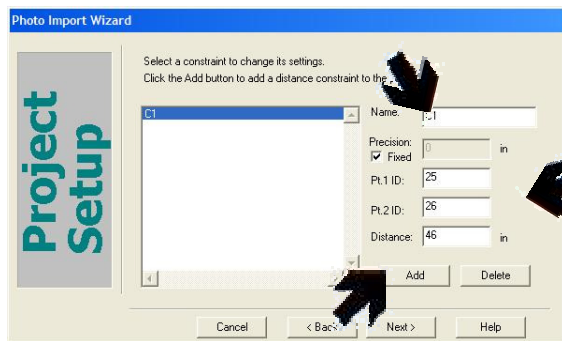
- Enter the codes from the rotation markers in your Intelli-Kit to define Automatic Rotation:  
 Horizontal – X Left to right  
 Code ID 1 = X1 code  
 Code ID 2 = X2 code  
 Vertical – Y Front to back  
 Code ID 1 = Y1 code  
 Code ID 2 = Y2 code
- Click Next
- Setting Distance Constraints



The scales placed on a jobsite, must each be defined separately as a constraint. By predefining 3 standard scales in the settings file, the automated Project Setup Wizard detects, marks and references the scale ends, and automatically defines the constraint distances. Each will be noted in the Automated Coded Target Project Summary dialog box.

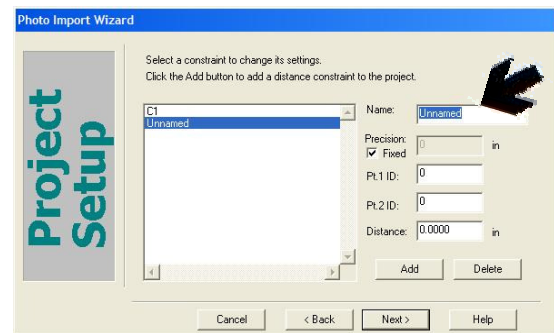
- In place of Unnamed, type a new scale name, ie: C1



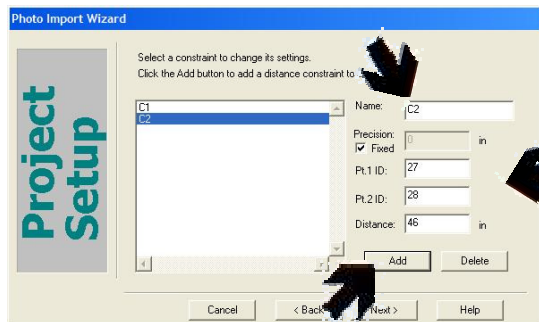


#### For C1 distance constraint

- Fill in      Pt. 1 ID      25  
                    Pt. 2 ID      26  
                    Distance    46 in.
- Click ADD

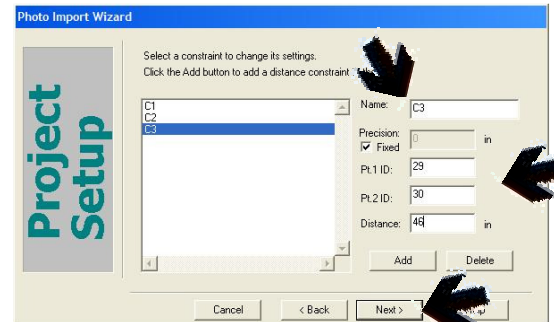


- Highlight Unnamed on right
- Type scale name, ie: C2



#### For C2 distance constraint

- Fill in      Pt. 1 ID      27  
                    Pt. 2 ID      28  
                    Distance    46 in.
- Click ADD



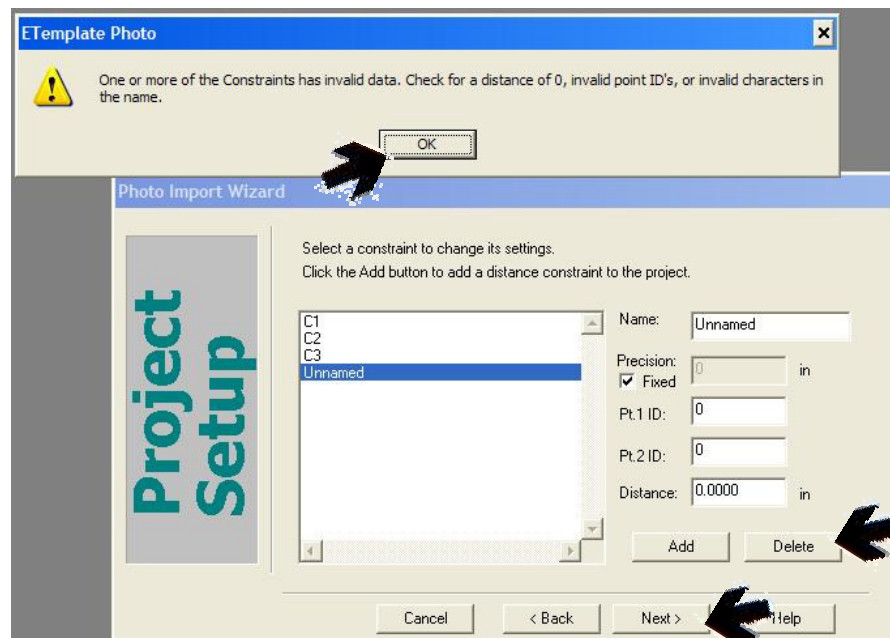
- Highlight Unnamed on right
- Type scale name, ie: C3

#### For C3 distance constraint

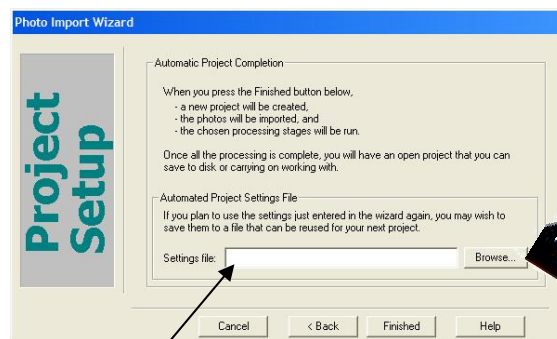
- Fill in      Pt. 1 ID      29  
                    Pt. 2 ID      30  
  
                    Distance    46 in

- Click Next

**NOTE:** If Add is clicked after defining the last constraint, the following will result:



The Unnamed Constraint must be Deleted before clicking Next.

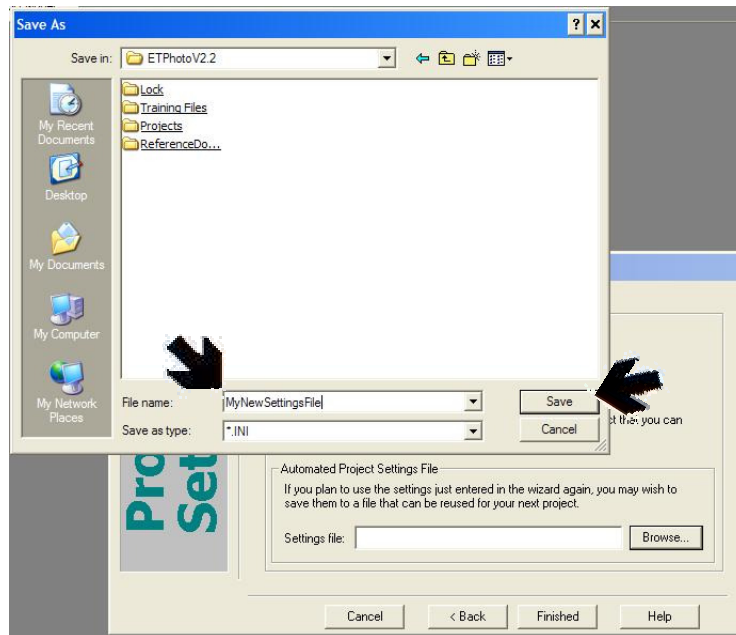


Ignore this area

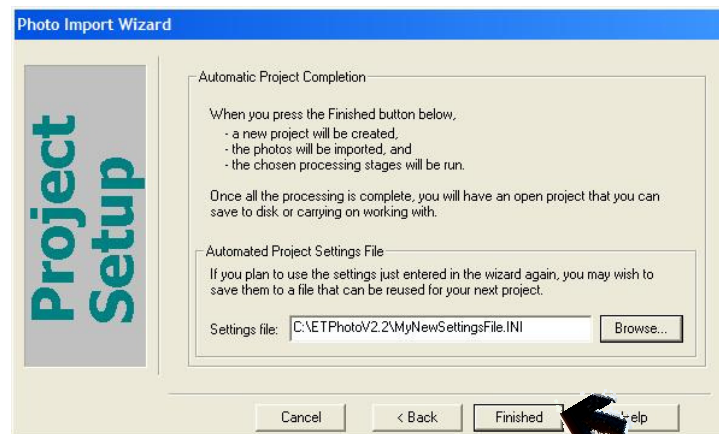
- To save a settings file for use with all new Automated Coded Target Projects photographed with the same camera, Click Browse

***TIMESAVER*** CREATING AND USING A SETTINGS FILE WITH ALL NEW PROJECTS ELIMINATES REPEATING APPROXIMATELY 10 OF THE ABOVE STEPS. A SETTINGS FILE RETAINS THE CAMERA AND PARAMETERS AS DEFAULTS AND TAKES THE USER FROM 'CHOOSING A TYPE OF PROJECT TO "CREATE"' IMMEDIATELY TO THE PHOTO IMPORT WIZARD (pgs. 3 & 4), THEN TO FINISH.





- Type a new File name for the settings file that will retain all default settings that were chosen or created in the Project Setup Wizard windows. The settings file name will be appended with .ini. Click Save.



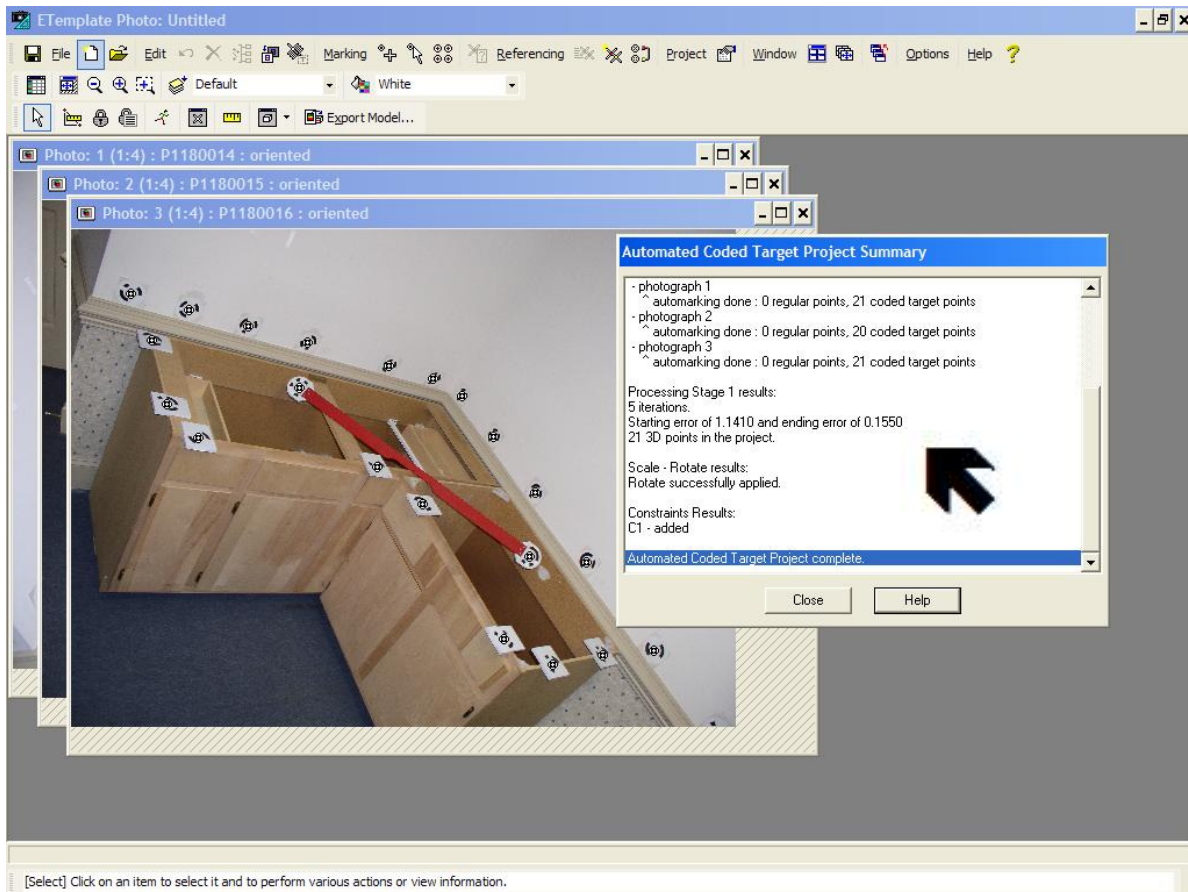
- Click Finished



**SAVE FREQUENTLY**



The selected images open with Intelli-Mark targets marked, and cascade one at a time to the workspace with “not oriented” stated in each image window title bar. As each mark in an image is referenced and the set of photos are processed, when a photo satisfies the required 6/1 Rule of Overlap, it then becomes oriented, designated in the specific window title bar. If all photographs satisfy the overlap requirements, then the ending error shown in the Project Summary dialog reflects the 3D model results based upon the chosen set of photographs.



- Review the **Automated Coded Target Project Summary** Dialog box and make note of the following under **Processing Stage 1 Results**:

Ending Error is less than .250 (or not)  
 Total # of 3D points in project  
 Rotation successfully applied (or not)  
 Constraints Results – Added (or not)  
 Project complete (or not)

- Click **Close**

- Click **Save Project**  – type in new **name** and verify the project is being saved in the folder with the specific project photos Click **OK**

- Click **Window** | **Tile** 

- Click **Window** | **Zoom to Fit All** 

When a project is completed by the Project Wizard and the ending error is less than a .250 overall value of goodness, the user should determine if the project is ready for export as a .dxf file by completing the following final Quality Assessment checks.

1. Check values:

Ending Error (Total error)	< .250 ( <u>Project</u>   <u>Project Status Report</u> )
Largest Residual (pixels)	< .80 (Point Table   sort)
Tightness (in.)	< .04 (Point Table   sort -- this is the most important value in determining accuracy)
Angle (degrees)	≥ 30°

2. Manually mark any markers that were not automatically marked on all photos and make sure these manual marks are referenced to their matching markers on other photos

Or

Check for any unreferenced ID points still remaining on only 1 Photo that are needed for template creation. They must be referenced to a matching point on at least a 2<sup>nd</sup> photo in order to be in the exported dxf file



- \* Open a Point Table
- \* To review unreferenced points sort PHOTOS column 1 time

► How To View Selected Point Table items:

- Select all point ID rows showing only 1 photo number in Photos column and right mouse click | click Open Photos Showing Selected

Or

- If all photos are opened and tiled to the workspace, select Expand selection to all Windows and Close the Point Table The Selected point(s) will be highlighted red in the photos

- \* Determine if these ID pts are needed for template creation  
If so, find the matching markers on photos that have not been automatically marked

Use the following tools:

Manual Sub-pixel Target Marking



Referencing  (Quick Reference Selected)  
Process  
Save frequently

### ► How To Use Referencing (Quick Reference Selected)

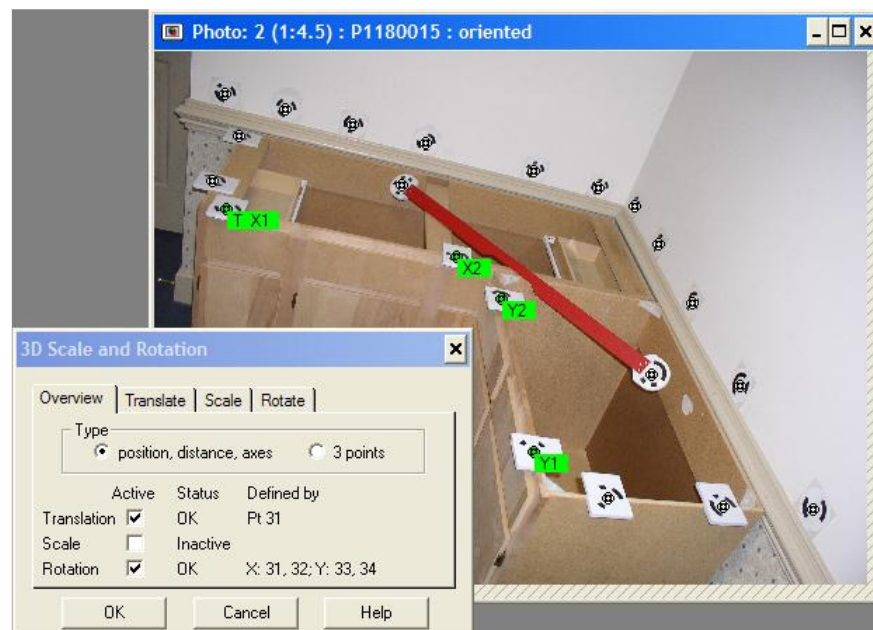
- \* Quickly cross reference any number of same item across photographs by selecting the same marker on open photographs using Select Items Mode and holding the SHIFT key down for multiple selection
  - Click **Quick Reference Selected**
    - If the **Quick Reference Selected** succeeds, the selected items are all referenced together and are unselected
    - If **Quick Reference Selected** fails, a warning message will appear displaying reason for failure and the items will remain selected

**Note:** You cannot **Quick Reference Selected** two items marked on the same photograph.

### 3. Check to make sure the X1X2/Y1Y2 rotation markers have been correctly defined

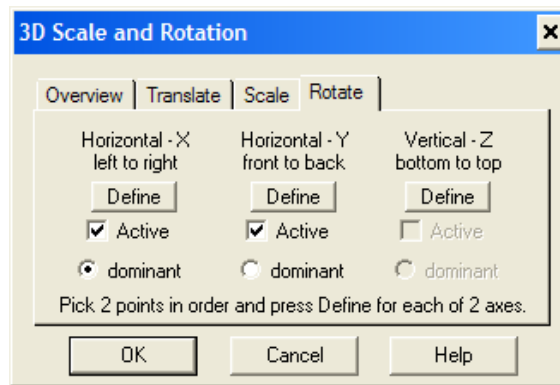
- \* Click Project | Scale/Rotate 

Verify that the X1/X2 designators have been placed left to right and that the Y1/Y2 designators have been placed front to back, so as to cross over the X axis in the (Cartesian coordinate system) positive direction.



- \* Click **Cancel**, if correct **OR**

- \* **Redefine the X1/X2 or Y1/Y2 markers if needed by clicking on the Rotate tab**

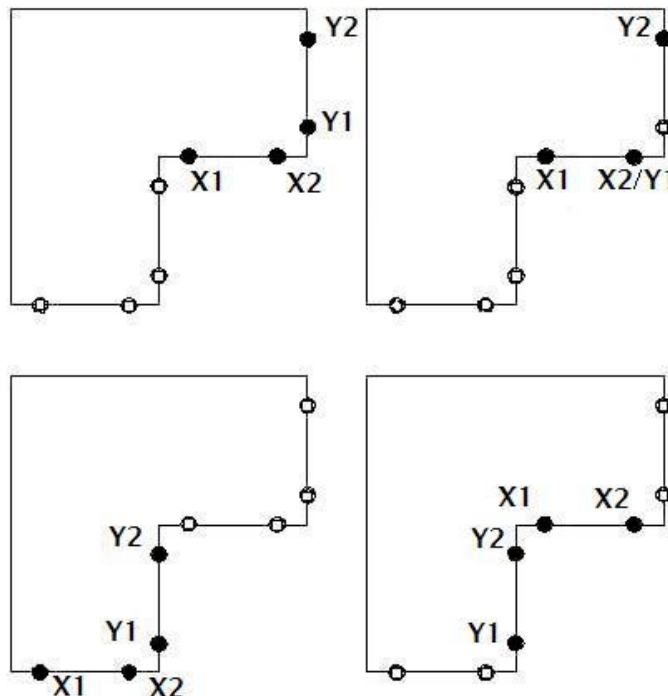


- \* **Click one (1) point for X1, hold Shift, click another point for X2**
- \* **Verify 2 similar markers on a straight edge, from left to right**  
**Click Define**
- \* **Click one (1) point for Y1, hold Shift, click another point for Y2**
- \* **Verify 2 similar markers on a straight edge, from front to back**  
**Click Define, Process and Save**

**NOTE: Do Not use wall markers for rotation points**

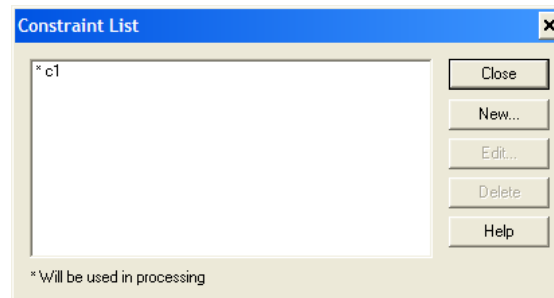
X1 (left) and X2 (right) markers should be placed as far apart as possible on the same edge  
X1 (front) and X2 (back) markers should be placed as far apart as possible on the same edge

**Rotation  
Definition  
Examples**




#### 4. Check that the constraints have been defined correctly

- \* Click Project | Constraints List



- \* Check a specific constraint by selecting it in the list and clicking Edit to view its Object point IDs and specified distance
- \* Delete a constraint by selecting it in the list and clicking delete
- \* Define a new constraint by:

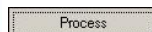
1. Click Constraint Definition Mode  click one (1) point on the first scale, hold Shift, click the other end point (two markers are highlighted red)

2. Click Add New Constraint



3. Verify in Constrain Properties dialog;  
type is 2 points to be a given distance apart  
default Scale Value is 46  
click OK

4. Click Process



Click SAVE




Repeat Constraint Definition steps 1 – 4 for all scales placed in a project if they are not automatically defined by being automatically marked, referenced and processed through the Automated Coded Target Project Wizard.

**\*\*\*USER MUST PROCESS & SAVE EACH CONSTRAINT BEFORE DEFINING ANOTHER\*\*\***

- \* Click Cancel if no new constraints need to be defined



\* To visually check constraint point IDs open a Point Table  and sort (SORT column by clicking in column header) the Constraints column. All Point IDs defined as Constraints will have a 1 in the column. There will always be twice as many ID rows with 1s as the number of constraints. (column should only show 0s or 1s)

► How To View Selected Point Table items:

- Select all constraint point IDs and right mouse click | click Open Photos Showing Selected  
Or
- If all photos are opened and tiled to the workspace, select Expand selection to all Windows and Close the Point Table  
The Selected point(s) will be highlighted red in the photos (this technique can be used to visually check for misreferenced constraint points)

5. Check the highest value of the LARGEST RESIDUAL (pixels)  
Sort LARGEST RESIDUAL (pixels) column 2 times  
Check that the Highest value <.80

► Follow up if necessary, to reduce the highest Largest Residual points to less than .80 and re-process and save

Point Table

Custom-1 [Configure...] [Close]

[Properties...] [Export...] [Help]

Largest Residual (pixels) column is sorted for the highest L/R point at the top of the table. ID #31 has L/R of 3.687 and the Photo Largest Residual column lists photo 1 to begin looking in, for the cause. Right mouse click in the selected point ID row and click Open Photos Showing Selected to view ID #31 point set markers.

Id	Name	Photos	Tightness (in)	Angle (deg.)	Largest Residual	Photo Largest Residual	Material	Layer	Tagged	Use In Processing	#
31		1,3,4,6,9	0.193099	87.096928	3.68776	1	White	Default		yes	
48		1,6,7,9	0.049844	85.023856	1.46					yes	
28		1,3,4,6,9	0.07249	77.343962	1.27					yes	
139		3,7,9	0.049671	11.725305	0.60					yes	
38		3,4,6,8,9	0.025403	82.988203	0.50					yes	
34		3,4,6,9	0.020829	83.739463	0.45					yes	
135		3,6,9	0.010795	47.576623	0.43					yes	
137		1,3,6,9	0.025684	50.222801	0.422803	1	White	Default		yes	

Properties of Selected... [Ctrl+P]  
Open Photos Showing Selected  
Create Photo Set From Photos Showing Selected  
Expand Selection to all Windows [W]  
Hide menu

‣ Zoom up on the red highlighted marker in each photo to try to determine if the photo listed in the Photo Largest Residual column is really where the point needs to be deleted or remarked and referenced, and then process again

Zoom by doing one of the following:

- mouse over a marker, then press and hold ALT key for a temporary zoom
- mouse over a marker, then use the mouse scroll button to zoom in or out
- mouse over a marker, and press the plus or minus key on the keyboard
- pick one of the Zoom tools or use one of ETPhoto's shortcut Keys from its Window menu

Enter Zoom In mode	I
Enter Zoom Out mode	O
Enter Zoom Area mode	U
Zoom Previous	Y

#### 6. Sort TIGHTNESS (in.) column 2 times

Check that the Highest value <.04

‣ Follow up if necessary, to reduce highest Tightness (in.) points to less than .04 and re-process and save

‣ How To:

Same as steps in Largest Residual (pixels) follow up  
Process and Save

#### 7. Sort ANGLE for lowest Angle Separation

The minimum Angle(degrees) should be 30°, whenever possible  
Any point ID under 10° will not be exported in the dxf file

- Close Point Table

#### 8. Open 3D viewer



Click Visibility tab  
Click Settings tab  
Click OK

Checkmark Camera Stations  
Checkmark Orthographic

Visually check for the correct orientation in the 3D viewer

- \* Scale/Rotate tool can be used to view green X/Y rotation markers
- \* Point Table Constraints column can be used to select Constraint points to be viewed red

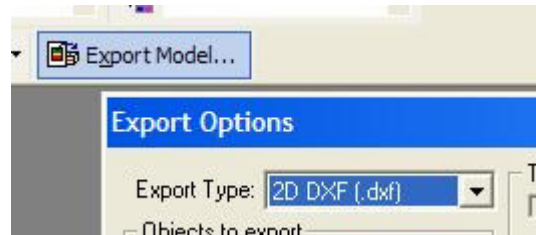
## 9. Click Project | Audit Statistics

Auditing is the process of reviewing project data that is important to the generation of the 3D model. The information provided by the Audit step can be instrumental in tracking down problems and in predicting the success of the processing stage.

For the best project results, verify:

- |                       |             |   |
|-----------------------|-------------|---|
| <b>Audit Overview</b> | <b>&gt;</b> | <b>Unused =0</b>  |
| <b>Audit Photo</b>    | <b>&gt;</b> | <b>Points Per Photo: Min. = 15</b><br><b>Photo Coverage (%area): Min. = 30</b>        |
| <b>Audit Points</b>   | <b>&gt;</b> | <b>Rays Per 3D Point: Min. = 2 (3 = Best)</b><br><b>Angle Intersection: Min. = 30</b> |

## 10. Click File | Export Model to export an ETemplate Photo finished project Point Set



- \* Choose Export Type: 2D DXF (.dxf) Click OK
- \* Input new filename for the point set .dxf file, Click Save
- \* Close Export Summary dialog

Import this .dxf file into a CAD/CAM system to create template outline, adding any additional sink cutouts, overhangs, centerlines, notes, designators, etc. then send for Tool Path or plotting for fabrication.



**SAVE FREQUENTLY**



### Notes:

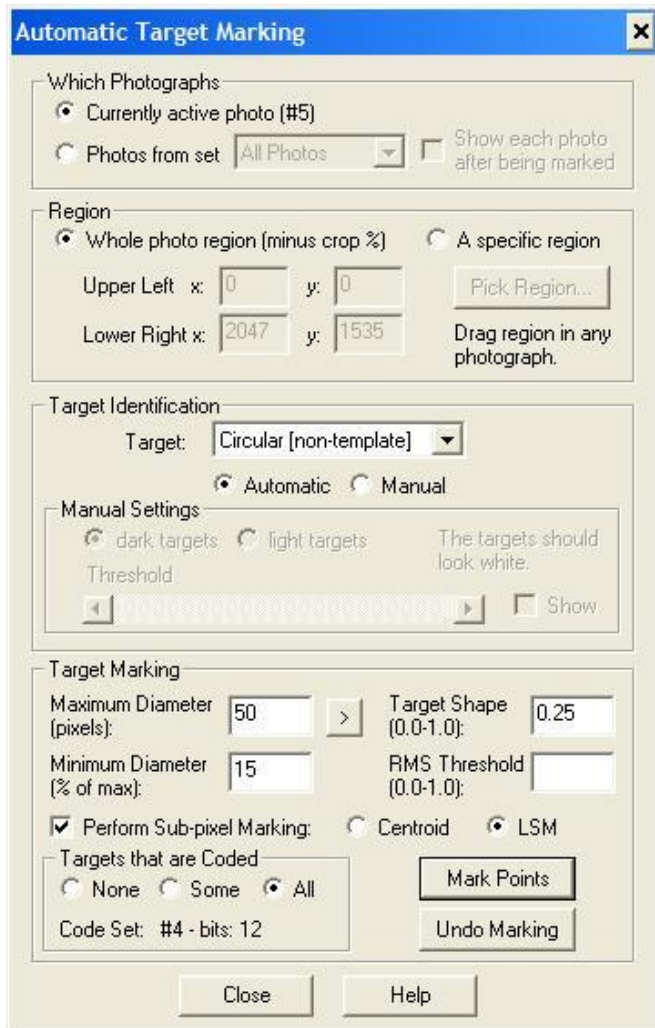
- If two Marked Points are referenced to each other, but they do not mark the same physical feature on the object, they will not generate a correct 3D point.
  - \* To **Unreference** unclear points right click on a particular point and click **Unreference Selected**
  - \* **Select** and **Delete** unnecessary points, if not needed for template creation

To **UNCODE** a marker, select a coded target point, and right mouse click for menu choice **Properties of Selected** and click **UNCODE | Apply** and the selected coded target on the specifically chosen photo will become an uncoded mark with a 1000 series ID #.

## Additional ETemplate Photo tools



Use the **AUTOMATIC TARGET MARKING** tool to automatically mark photos being added into a project.



**Currently active photo (#)** allows the program to filter the active photo to find any targets that may need marked

or

**Photos from set** allows the user to select Photos from set **Unoriented** by clicking



**Whole photo region (minus 10% outer image frame) in the active photo is filtered to be auto-marked**

or

**Pick Region** in one photo by dragging a window around a group of markers.

**Mark Points** for the chosen region.

Continue by dragging a second region for the remaining markers, and mark points again.

The **Maximum Diameter**, **Minimum Diameter** and **Circle Shape** may need to be modified to get all targets marked. Use the ">" tool, next to **Maximum Diameter** size to determine what **Maximum Diameter** pixel setting to try.

Continue for each added photo.

After all photos are marked, **Close** the Automatic Target Marking dialog box, and clean out any unnecessary marks by using the **Select** tool.

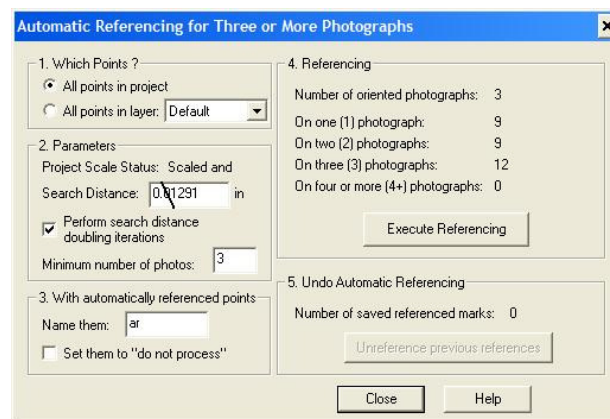
Press the **Del** key on the keyboard and hold it, while moving around in a photo and selecting the unnecessary marks. (select by clicking a single mark or draw a select window around multiple marks to delete them).

NOTE: There may be some coded targets that cannot be found (either too small, too sharp an angle, not enough of a gap between target and code ring or the code ring and background are too similar in color/intensity). So it is a matter of making sure there are enough good coded targets in each image to do what you want taking into account some of the targets might be missed. This also means that when the 'Some' option above is used, when a coded target is missed you might end up with small code bits being marked as targets.

If a mark or group of marks is deleted by mistake, release the Delete key, move the cursor to **Edit** (pull-down menu) / **Undo Delete** and the last deleted item or group of items will reappear.

Continue until all photos have any unnecessary marks removed.

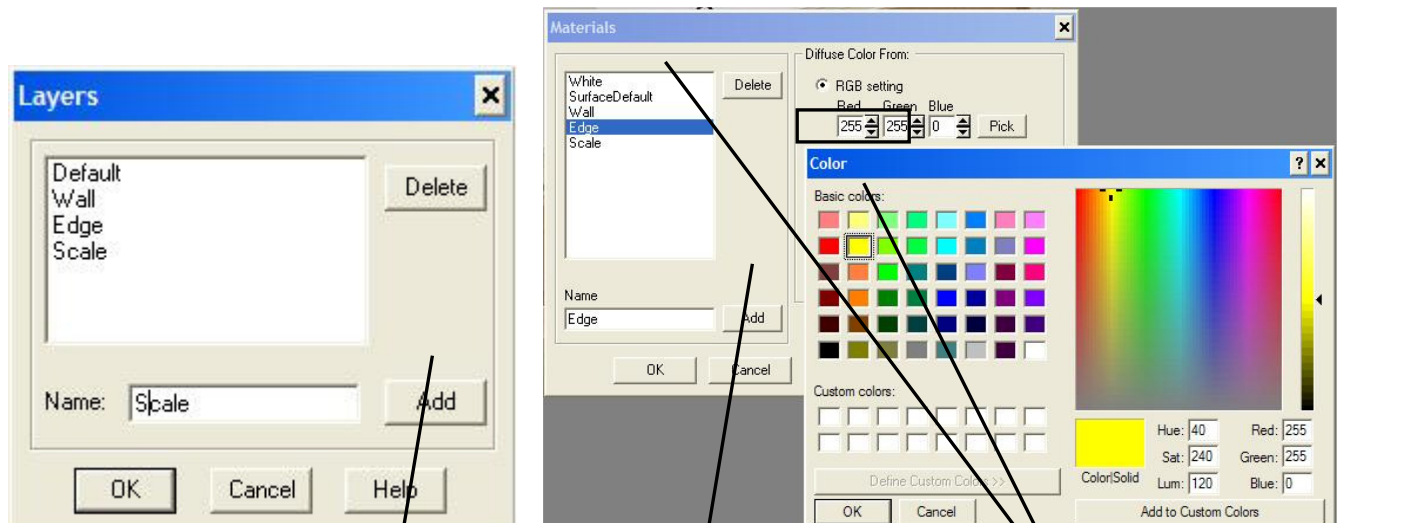
Use the AUTOMATIC REFERENCING tool to automatically reference marks being added into a project.



- 1. All points in project
- 2. Parameters:
  - Set **Search Distance**. This value/# tells ETemplate Photo up to what distance to search for other photo point locations. The default value is the current highest Tightness (in.) value. A good rule of thumb is to increase this value by a factor of 10 by removing the first '0' to the right of the decimal point.
- 3. OK
- 4. **Execute Referencing**
- 5. Note the **number of saved reference marks** found.
- **Close**; then Process and Save

## DEFINING LAYERS AND MATERIALS (COLORS)

Use the **LAYERS AND MATERIALS** tools to set properties of a specific group of points to a new layer name for easier access during the template creation



The image shows two screenshots of software dialog boxes. The 'Layers' dialog on the left has a list containing 'Default', 'Wall', 'Edge', and 'Scale'. The 'Materials' dialog on the right shows 'White' selected in the list, with 'Diffuse Color From' set to 'RGB setting' and values of 255, 255, 0. A 'Color' sub-dialog is open, showing a color picker with yellow selected. Arrows point from text instructions to specific elements in these dialogs.

**Click Layers**  
**Click ADD & type Wall**  
**click ADD & type Edge**  
**click ADD & type Scale**  
**OK**

**Click Materials**  
**Click ADD & type Wall; click ADD & type Edge**  
**click ADD & type Scale; OK**

**Select one name**  
**Click Pick &**  
**Select a Basic Color**  
**Click OK**  
**Repeat for each Layer**  
**Click OK; OK**

Next, to define the layers/materials, open only a few photos containing all markers in project and ie: select all wall markers then click pull downs for correct name



To define the next layer/material, just begin to select the new type of markers and repeat above step, pulling down for the correct Layer/Material names.



# ETEMPLATE PHOTO PROJECT PROCESSING CHECK LIST

SAVE FREQUENTLY

REF- SECTION/PAGE	ASSESSMENT	WHAT TO CHECK FOR
pg. 10  & Sec. 1, pg. 11	<b><u>Automated Coded Target Project Summary Dialog</u></b> Total number of coded targets per photo = minimum 15 each Ending Error [total overall value of goodness] < .250 Total number of 3D points in project Translate <input type="checkbox"/> Successfully applied <input type="checkbox"/> Not Applied Rotation <input type="checkbox"/> Successfully applied <input type="checkbox"/> Not Applied Constraints Results: C1 – added <input type="checkbox"/> C2 – added <input type="checkbox"/> C3 – added <input type="checkbox"/> Automated Coded Target Project <input type="checkbox"/> Complete <input type="checkbox"/> Not Complete Save new project name	
Sec. 2, pg. 11 pgs. 18-19, 22	Targets-- Marked	All necessary targets have been marked
pgs. 12 or 19	Targets-- Referenced	All necessary targets have been referenced and processed -- Use Quick Reference Selected or Automatic Referencing
Sec. 2, pg. 11 Sec. 5, pg. 15 Sec. 6, pg. 16 Sec. 7, pg. 16	Point Table Columns (Sort)	<b><u>Photos</u></b> – Each ID row to show a <u>minimum</u> of 2 photos <b><u>Largest Residual</u></b> – highest value < .80 <b><u>Tightness (in)</u></b> –    highest value < .04 <b><u>Angle (degrees)</u></b> –   lowest angle > 30°
Sec. 3 pg. 12-13	X/Y Rotation markers & orientation	All 4 markers are marked, referenced and processed Rotation is defined
pg. 25	Measure Mode	Double check length of a scale or field dimension
Sec. 4 pg. 14-15	Constraints	Constraints List Constraint Column on Point Table
pg. 20	Marks / Points	Layered / colors assigned
Sec. 8 pg. 16	3D Viewer	Rotation / view looks correct; all necessary points are visible, layered, etc Camera Stations show good angle separation
Sec. 9, pg. 17	Audit Statistics	Verify minimum requirements & no unused points
Sec. 10, pg. 18	Export Model	Export 2D.dxf point set Open or import in CAD/CAM software

## Manual Tools of ETemplate Photo V2



Click **Sub-pixel Target Mode**

- Mouse over marker, press **alt** to zoom in on Intelli-Mark, center cursor target over a mark and **click + drag** box around mark, **release** mouse button, **release** alt key; repeat for all marks

**NOTE:** If a mark is *partially covered/blocked* it should not be marked and used because it may affect the Tightness (in.) value indicating a possible inaccuracy.

Click **Reference**

- Select one (1) photo as **Source** (left side – Reference photo) and the other as **Destination** (right side - Photo)
- For referencing, select/highlight point(s) in **Source** photo using one of the following three methods:



- Single select** by left mouse clicking a marker
- Select window/box**: by left mouse clicking + dragging a window around multiple markers  
(may select multiple windows/boxes, by pressing Shift to add to a selection)
- Right click** for pop-up menu in **source** photo and click **Select All**
- Add to a selection** by holding the SHIFT key down while continuing to single select, or drag multiple windows

**NOTE:** Click **Shift + F** to maximize multiple photos to their workspace screens.

- Bring mouse into **Destination** photo and (match) **click** appropriate point one at a time – following yellow highlighted numbers in the **source** photo

**NOTE:** If highlighted point in Source photo is *not* in Destination photo – press **Esc** to skip to the next selected point.

## TIP: REFERENCING POINTS CORRECTLY THE FIRST TIME SAVES TIME















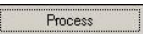

## Process




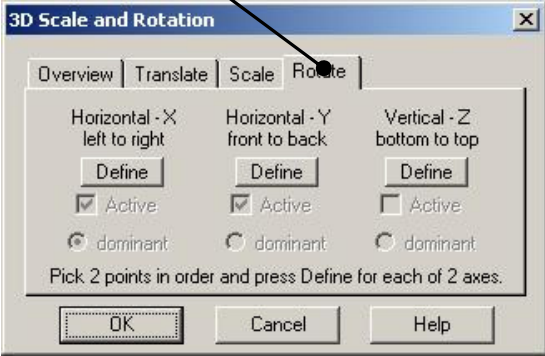




Click **Process** to *orient* photos

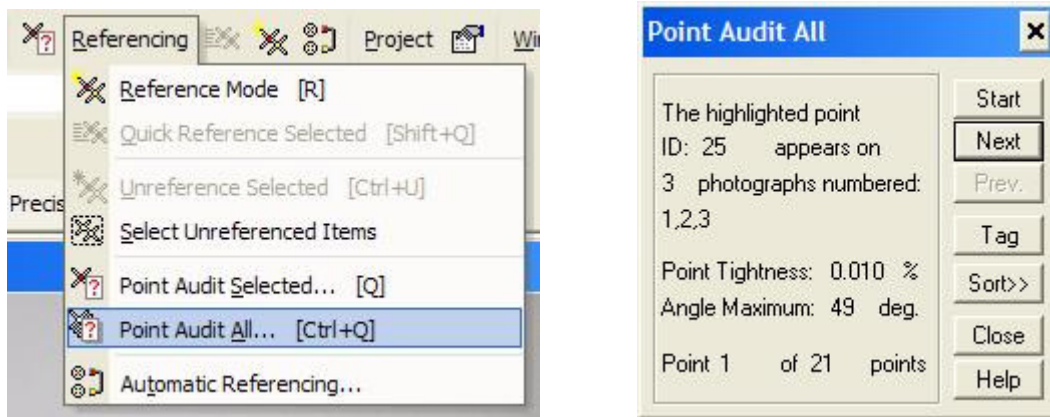
- Total processing error should be *under .25* for good projects.

**NOTE:** If **Point Table** Quality Assessments are within their limits, the Total processing error may be greater than .25 in some 4-5 photo projects.

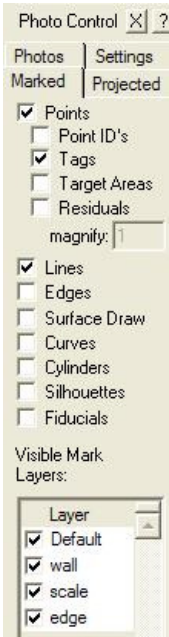
     	<p><b><u>ADD</u></b> [File   Add/Remove Photos] only 1 photo at a time, or if adding 3-4 at a time remember all photos marked "use and adjust" must satisfy the <b>6/1 RULE of Overlap</b> to enable processing to produce a 3D model and it's "value of goodness"</p> <p><b><u>Mark, Save</u></b></p> <p><b><u>Reference</u></b>, making sure each added photo has <b>at least [6/1 RULE of Overlap]</b></p> <p><b>6+ marks in common with one (1) other photo, and has 1+ mark in common with two (2) other photos</b> for referencing to enable processing</p> <p><b><u>Process</u></b>, , <b><u>Save</u></b></p>
 	<p><b>Add scale</b> if there is only one scale in the project. Open a photo with a scale in it. Click <b><u>Project</u></b> &gt; <b><u>Scale &amp; Rotate</u></b> &gt; click <b><u>Scale</u></b> tab</p> <div data-bbox="388 732 1354 1100" data-label="Image"> </div> <p>Click one (1) end <u>point</u> of a scale, hold <b>Shift</b>, click the other end <u>point</u>, verify the appropriate <b><u>Scale Distance</u></b>, click <b><u>Define</u></b>, <b><u>OK</u></b>, and <b><u>Save</u></b>.</p> <p>A scale cannot be used as both a constraint and a scale</p> <p>Use 1 scale <i>or</i> if using more than one scale, use <u>constraints</u>, <b>NO</b> scale</p>
    	<p><b>Add <u>Constraints</u> instead of scale</b></p> <ol style="list-style-type: none"> <li>1. Click <b><u>Constraint Definition Mode</u></b> click one (1) <u>point</u> on the first scale, hold <b>Shift</b>, click the other end point</li> <li>2. Click <b><u>Add New Constraint</u></b> and in <b><u>Constrain Properties</u></b> type is <b><u>2 points to be a given distance apart</u></b>, default <b><u>Scale Value</u></b> is 46.000, click <b><u>OK</u></b></li> <li>3. <b><u>Process</u></b> and <b>SAVE</b></li> </ol> <p><b>-- Repeat Constraint Definition steps 1- 3 for all scales in the project --</b></p>

           <div>Process</div> 	<p>Click <b>Project</b> &gt; <b>Scale &amp; Rotate</b> (ignore Scale when using Constraints)</p> <p>Click <b>Rotate</b> tab to define a flat plane needed for template</p>  <p>Define a flat <i>plane</i>:</p> <p>Click one (1) <u>point</u> for <b>X1</b>, hold <b>Shift</b>, click another point for <b>X2</b></p> <ul style="list-style-type: none"> <li>• Verify 2 similar markers are used on a straight edge, from left to right</li> <li>• Click <b>Define</b></li> </ul> <p>Click one (1) <u>point</u> for <b>Y1</b>, hold <b>Shift</b>, click another point for <b>Y2</b></p> <ul style="list-style-type: none"> <li>• Verify 2 similar markers are used on a straight edge, from front to back</li> <li>• Click <b>Define</b>, <b>Process</b> and <b>Save</b></li> </ul>
	<p>Check <b>Point Table</b></p> <ul style="list-style-type: none"> <li>• <b><u>Largest Residual Pixel Size</u></b> <i>should be <u>under .80</u></i></li> <li>• <b><u>Tightness (in)</u></b> <i>should be <u>.04 or less</u></i></li> </ul>
	<p><b>Save</b> project file intermittently and before continuing to the next step</p> <p>***<b>ROTATE MUST BE COMPLETED BEFORE FILE/EXPORT MODEL</b>***</p>
<p><b>Set the property of a specific group of points to a new layer name for easier access during the CAD template creation:</b></p> <ul style="list-style-type: none"> <li>• select a group of <b>points</b> in photo(s) while holding down Shift key</li> <li>• Right mouse click and select <b>properties of selected</b></li> <li>• Select <b>material/layer</b> tab <ol style="list-style-type: none"> <li>1. If a layer name has been added, use pull down to select <b>layer name</b>, click <b>Apply</b> and then <b>OK</b></li> <li>2. If no layer name is defined, click <b>Mark/Layer</b> and then <b>Add</b>. Type in desired <b>name</b>, select desired <b>layer</b>, click <b>apply</b> and <b>OK</b></li> </ol> </li> </ul>	

## Troubleshooting with Point Audit Selected or Point Audit All



Select All photos & Open, then visually verify references are correct on each yellow highlighted set of ID markers, Tag if not, for later correction or click NEXT in Audit box to continue verification, until all point ID sets have been checked.



Use TAG while using the **REFERENCING | POINT AUDIT ALL or SELECTED** tool, above, in order to note what point ID set needs troubleshooting.

Once an audit has been completed, and the dialog box is closed, a user can right click on a "I" tag in a photo and select



**OPEN PHOTOS SHOWING SELECTED**

Or

If all photos are opened and tiled to the workspace, select



**EXPAND SELECTION TO ALL WINDOWS**

Close the Point Table

Selected point(s) will be highlighted red in the photos. The necessary action can be done and the tag can be cleared by clicking

**EDIT | CLEAR SELECTED or ALL TAG(s)**



Use **Measure Mode** to check measurements between 2 markers on photos or on the 3D Viewer point set, by selecting 1 marker, press & hold Shift, and select the second marker for measurement between.



## ***ETemplate Photo Reminders***

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### **Remember:**

To add a new photo – it must have at least 6+ points in common with 1 previously oriented photo, and have 1+ point in common with 2 other previously oriented photos

---

Note: Press the **Alt** key or use **Zoom** Icons/keys to help visualize problems.

To **Unreference** unclear points right click on the particular point and click **Unreference**

**Selected** or **Select** and **Delete** unnecessary points, if not needed for template creation

OR

Select a coded target point, and right mouse click for menu, select **Properties of Selected** and

click **UNCODE | Apply** and the selected coded target on the specifically chosen photo will

become an uncoded mark with a 1000 series ID #

---

### **IMPORTANT**

Every marker needed to create a template drawing must be referenced and processed on at least 2, 3 are better, photos. Points not cross-referenced appear on only one photo and therefore, have no actual 3D location and will not appear in the final Exported file.

## ***Template Creation***

---

IF using Cadkey: Click **CK19** desktop icon

- In Cadkey select **File > Import > AutoCAD dxf**. Browse to find the exported file in the **JOB** folder and **Open** the imported file of points

**NOTE: IF SET OF POINTS APPEAR “SKEWED” EXIT CADKEY. OPEN ETEMPLATEPHOTO.**

**REORIENT POINT SET USING ROTATE AND EXPORT MODEL. IMPORT INTO CADKEY AGAIN.**

- Click **M** for countertop menu
- 

### ***IF not using Cadkey***

Create the template drawing by importing or opening the DXF file in CAD/CAM application

**ETemplate *First !!***



## ETEMPLATE PHOTO EQUIPMENT

ITEM	DESCRIPTION
	Intelli-Mark Wall Markers
	Intelli-Mark Edge Markers 20 Markers – Set A or Set B 40 Markers – Set A & Set B
	Intelli-Marks on Cardstock 12 cards – 2 Intelli-Marks per card
	Intelli-Mark Scales 3 Scales
	ETemplate Digital Measuring Camera
	Step stool – NOT INCLUDED
	Edge Locator Bracket for Remodels To place edge markers on existing countertops
	Standard Non-coded Target Markers Standard ETemplate 1 <sup>st</sup> Generation Markers or Non-Standard Avery Markers
	<b>Carrying Cases and notebook</b>

In addition, you may want to bring additional items depending on your job requirements: White Board, Notepad, Misc. Stickers (Avery Markers), and if necessary, other pre-determined measurement fixtures.

## The significance of Intelli-Marks and how they are used

The Intelli-Marks are circular targets with a unique segmented ring-like bar code that is automatically recognized by the ETemplate software process.



**Wall Markers**



**Edge Markers**

The two types of Intelli-Marks are Intelli-Mark stickers and Intelli-Mark Edge Markers. The stickers are normally placed along the wall surfaces. The Intelli-Mark Edge Markers are placed flat or standing on the ends/faces of the cabinets for all necessary profiles.



**Intelli-Scale**

In addition to these two Intelli-Mark types, you will also use Intelli-Mark scales, which provide accurately specified measurements.

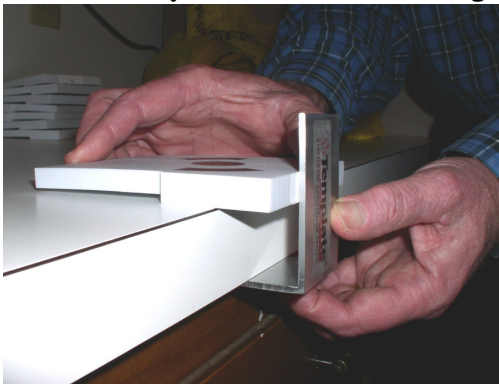
The following table shows the effects of temperature on the 46.00" aluminum scales. All materials are affected by temperature. These scales have been designed to minimize changes due to temperature variations. When you are in an environment with fairly extreme temperatures, it is a good practice to measure the scale to verify how it may have varied. As you can see from the table below, temperature has only a minimal effect on the scale length. In the vast majority of templates this will not affect your process. For large templates during extreme temperature, you may want to measure the scale. When measuring the scale, be sure to measure from center of marker to center of marker. When you do find small changes in the scale length, use the new value in the scale/constraint functions.

Scale Temperature	Measurement Affect
90 degrees	+ .016 inches (1/64)
80 degrees	+ .008 inches
70 degrees	no change
60 degrees	-.008 inches
50 degrees	-.016 inches (1/64)
40 degrees	-.024 inches
30 degrees	-.032 inches (1/32)



Note the red box. Each Intelli-Mark has a unique segmented ring code and number.

## E-Template Locator Bracket Instructions for quick and easy templating with existing tops on



**For standard use** – slide the tool (long side up) until it reaches the cabinet edge.

Place your Intelli-Mark Edge Marker with the short side facing front.

The center of your Intelli-Mark is now directly over the cabinet edge.



**For use with a drip edge top** – slide the tool (short side up) until it reaches the cabinet edge.

Place your Intelli-Mark Edge Marker with the long side facing front.

The center of your Intelli-Mark is now directly over the cabinet edge.

The following table identifies each target marker and its use:

Table: Target number and use

Number	Use
1 – 24	<b>Intelli</b> – Marks provided on card stock for random use
25 & 26	<b>Intelli</b> – Marks: First Scale Points C1
27 & 28	<b>Intelli</b> – Marks: Second Scale Points C2
29 & 30	<b>Intelli</b> – Marks: Third Scale Points C3
31 - 50	Set “A” <b>Intelli</b> – Mark Edge Markers
51 - 70	Set “B” <b>Intelli</b> – Mark Edge Markers
71 – 140	<b>Intelli</b> – Mark Wall Markers (Self Adhesive on Roll) 18 sets on a roll or 1260 total ( <b>Do not duplicate</b> numbers in same jobsite)
141-161	Reserved for future use (These may be printed on card stock for extra marks)
1 - 161	Complete set of <b>Intelli</b> – Marks provided in .pdf file with system

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**IMPORTANT:** Each Intelli-Mark has a unique number that is recognized and recorded into the point table during processing. If a target is placed in a job more than once, it will cause referencing problems during the processing phase.

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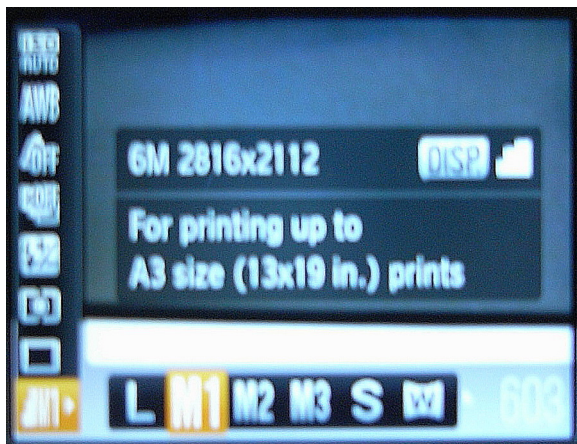
# Canon S90 Settings

**Before turning on camera – verify “Mode” dial is set to “C”**

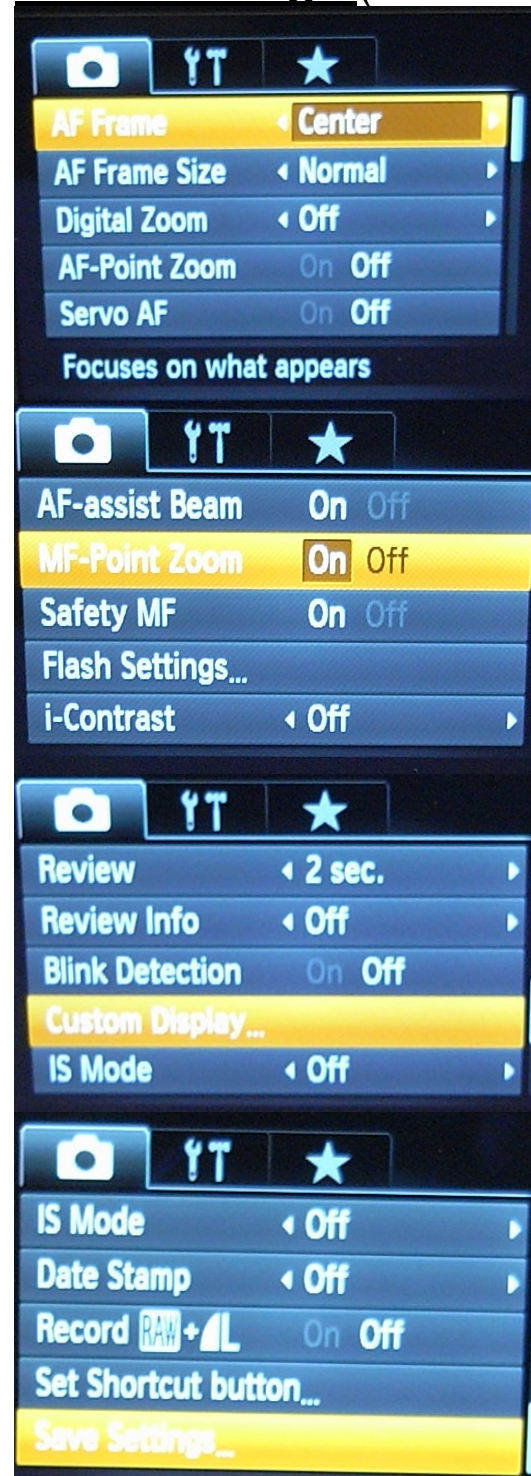
The “C” setting is programmed for the following settings.

## Function Key Settings

6M 2816x2112 (M1) and “Normal” setting



## Menu Settings (screenshots)



If you think your camera settings have been reset use the following settings to verify.

**Func Set (button)**

**All settings are the default except:**

M1 – Normal (6M 2816x2112)

**Menu (button)**

AF Frame**Center**

AF Frame Size**Normal**

Digital Zoom **Off**

AF-Point Zoom**Off**

Servo AF **Off**

AF-Assist Beam **On**

MF-Point Zoom **On**

Safety MF **On**

Flash Settings **Do not change**

i-Contrast **Off**

Review 2 sec

Review Info **Off**

Blink Detection**Off**

Custom Display

IS Mode **Off (CRITICAL)**

Date Stamp **Off**

Record Raw + L **Off**



## ETEMPLATE PHOTO

## JOBSITE SETUP CHECK LIST

JOBSITE HARDWARE PLACEMENT	
<b><i>Intelli</i></b> -- Marks (Coded Targets)	<ul style="list-style-type: none"> <li>Place targets <b>every 12-18"</b> -- at least 2 per edge</li> <li>Place on top of cabinets/countertops</li> <li>Place on walls/cabinet faces</li> <li>Make sure at least 15 coded targets will be in each photo</li> </ul>
<b><i>Intelli</i></b> -- Marks Stickers	<ul style="list-style-type: none"> <li>Place along wall(s) as desired and on cabinet faces for remodeling</li> </ul>
<b><i>Intelli</i></b> -- Marks Edge Markers	<ul style="list-style-type: none"> <li>Place flat or standing vertically on ends or faces of cabinets for all necessary profiles (i.e.: edge profile, sink center, etc.)</li> <li>Place markers to be used as X1 / X2 axis and Y1 / Y2 axis (must be on same flat plane)</li> </ul>
<b><i>Intelli</i></b> -- Marks Scales	<ul style="list-style-type: none"> <li>Lie flat or on edge or angle, on cabinets or countertop</li> <li>Place <b>1 scale EVERY 8-10 FT</b> (scale 40-50% of overall project linear length)</li> <li><b><i>Scales are Necessary for ACCURATE measurement</i></b></li> </ul>
Additional Information	<ul style="list-style-type: none"> <li>Use a small white board, notepads, or sticky notes placed in photos to note all additional styles, reveals, or other miscellaneous, necessary measurement information</li> </ul>

**Note:** Use enough of above hardware items to insure each photo will contain a minimum of 15 markers spread out across each complete image to insure that each photo will satisfy the Rule of Overlap and facilitate automatic processing in the ETemplate Photo software. The more common or overlapping points among photos and the better spread of the markers across each complete image, the better chance for the automatic processing wizard to complete the project.

***See Process Center for more information on Job-site set-up***

# TAKING PHOTOGRAPHS

1. **Verify** camera is set to ALL RESET ON
2. **DO NOT ZOOM OR USE THE TELEPHOTO** button on camera
3. **ALWAYS Use Focus Lock when taking photos**  
--Press the shutter button half way down, then depress all the way down
4. **Each photo** should contain at least 15 coded targets spread across the image
5. **Photos should be taken as close to 90°** apart, as possible for each run/section
6. **Take 2 or more “overall” photos, from different horizontal/vertical angles (90° apart is best)** with large percentage of all project marks included. These overall photos help make a job process easier and faster by requiring fewer photos to complete the actual processing.
7. **Close-up photos should cover at least 8-10 feet of countertop**, with min. 15 points.
8. **Photos must be taken from physically relocated and widely separated positions** for best camera station rays and angles. Photos should be taken at varying height levels.
9. **Take a minimum of 3 photos; more (5 +) is better.** Opposite angle, overall photos aid in easier and faster, more accurate processing
10. **Avoid taking photos with points in the 10% imaginary outer frame** of the camera monitor screen. They may be unusable due to large residual (pixels) values greater than .8.
11. **Each marker point must be in at least 2 photos, 3 are better.** Any point not referenced in at least 2 photos will be “unused” and will not export with the point set.
12. **Always take extra photos.** (a good rule of thumb is 3-5 photos per run/section)
13. Use a step stool to get larger angles between photos and better overall image coverage of marks per photo.
14. **Continue to hard template/collect field measures during the learning curve to check accuracy. Field dimensions may be used to check a template's accuracy.**
15. **Do not leave job-site without previewing your photos.** Make sure the above criterion have been met before leaving job-site. When previewing, zoom in to check photo details.

## EDGE MARKER SUGGESTED SET-UP

SET A Codes 31 - 50			SET B Codes 51 - 70		
Set A 1	31 – 46	Mark edges	Set B 1	51 – 66	Mark edges
	47 – 50	Mark sink/stove/bartop/etc		67 – 70	Mark sink/stove/bartop/etc
	Translate/Rotation codes 51 – 54:			Translate/Rotation codes 31 – 34:	
	51 - Translate origin (0,0,0)			31 - Translate origin (0,0,0)	
	51 (X1) – 52 (X2)	53 (Y1) – 54 (Y2)		31 (X1) – 32 (X2)	33 (Y1) – 34 (Y2)
Set A 2	31 – 46	Mark edges	Set B 2	51 – 66	Mark edges
	47 – 50	Mark sink/stove/bartop/etc		67 – 70	Mark sink/stove/bartop/etc
	Translate/Rotation codes 55 – 58:			Translate/Rotation codes 35 – 38:	
	55 - Translate origin (0,0,0)			35 - Translate origin (0,0,0)	
	55 (X1) – 56 (X2)	57 (Y1) – 58 (Y2)		35 (X1) – 36 (X2)	37 (Y1) – 38 (Y2)
Set A 3	31 – 46	Mark edges	Set B 3	51 – 66	Mark edges
	47 – 50	Mark sink/stove/bartop/etc		67 – 70	Mark sink/stove/bartop/etc
	Translate/Rotation codes 59 – 62:			Translate/Rotation codes 39 – 42:	
	59 - Translate origin (0,0,0)			39 - Translate origin (0,0,0)	
	59 (X1) – 60 (X2)	61 (Y1) – 62 (Y2)		39 (X1) – 40 (X2)	41 (Y1) – 42 (Y2)
Set A 4	31 – 46	Mark edges	Set B 4	51 – 66	Mark edges
	47 – 50	Mark sink/stove/bartop/etc		67 – 70	Mark sink/stove/bartop/etc
	Translate/Rotation codes 63 – 66:			Translate/Rotation targets 43 – 46:	
	63 - Translate origin (0,0,0)			43 - Translate origin (0,0,0)	
	63 (X1) – 64 (X2)	65 (Y1) – 66 (Y2)		43 (X1) – 44 (X2)	45 (Y1) – 46 (Y2)
Set A 5	31 – 46	Mark edges	Set B 5	51 – 66	Mark edges
	47 – 50	Mark sink/stove/bartop/etc		67 – 70	Mark sink/stove/bartop/etc
	Translate/Rotation codes 67 – 70:			Translate/Rotation codes 47 – 50:	
	67 - Translate origin (0,0,0)			47 - Translate origin (0,0,0)	
	67 (X1) – 68 (X2)	69 (Y1) – 70 (Y2)		47 (X1) – 48 (X2)	49 (Y1) – 50 (Y2)
CUSTOMERS WITH SETS <u>A</u> AND <u>B</u>					
31 – 62	Mark edges		Translate/Rotation codes 67 – 70:		
63 – 66	Mark sink/stove/bartop/etc		67 - Translate origin (0,0,0)		
			67 (X1) – 68 (X2)		69 (Y1) – 70 (Y2)



# ETEMPLATE PHOTO PROJECT PROCESSING CHECK LIST

SAVE FREQUENTLY

REF- SECTION/PAGE	ASSESSMENT	WHAT TO CHECK FOR
pg. 10  & Sec. 1, pg. 11	<b><u>Automated Coded Target Project Summary Dialog</u></b> Total number of coded targets per photo = minimum 15 each Ending Error [total overall value of goodness] < .250 Total number of 3D points in project Translate <input type="checkbox"/> Successfully applied <input type="checkbox"/> Not Applied Rotation <input type="checkbox"/> Successfully applied <input type="checkbox"/> Not Applied Constraints Results: C1 – added <input type="checkbox"/> C2 – added <input type="checkbox"/> C3 – added <input type="checkbox"/> Automated Coded Target Project <input type="checkbox"/> Complete <input type="checkbox"/> Not Complete Save new project name	
Sec. 2, pg. 11 pgs. 18-19, 22	Targets-- Marked	All necessary targets have been marked
pgs. 12 or 19	Targets-- Referenced	All necessary targets have been referenced and processed -- Use Quick Reference Selected or Automatic Referencing
Sec. 2, pg. 11 Sec. 5, pg. 15 Sec. 6, pg. 16 Sec. 7, pg. 16	Point Table Columns (Sort)	<b><u>Photos</u></b> – Each ID row to show a <u>minimum</u> of 2 photos <b><u>Largest Residual</u></b> – highest value < .80 <b><u>Tightness (in)</u></b> – highest value < .04 <b><u>Angle (degrees)</u></b> – lowest angle > 30°
Sec. 3 pgs. 12-13	X/Y Rotation markers & orientation	All 4 markers are marked, referenced and processed Rotation is defined
pg. 25	Measure Mode	Double check length of a scale or field dimension
Sec. 4 pgs. 14-15	Constraints	Constraints List Constraint Column on Point Table
pg. 20	Marks / Points	Layered / colors assigned
Sec. 8 pg. 16	3D Viewer	Rotation / view looks correct; all necessary points are visible, layered, etc Camera Stations show good angle separation
Sec. 9, pg. 17	Audit Statistics	Verify minimum requirements & no unused points
Sec. 10, pg. 18	Export Model	Export 2D.dxf point set Open or import in CAD/CAM software

# QUALITY ASSESSMENTS

**Total Error: < .250** (unless ~ 5 photos or less)

(same as Total Error, Last Error, Ending Error)

## POINT TABLE VALUES:

**LARGEST RESIDUAL**  
(pixels)

**< .80**

**TIGHTNESS**

**< .04 (in.)**

**<1(mm)**

**ANGLE (deg.)**

**>30 degrees**

**Especially scale points**

### NOTE:

**IF Largest Residual (pixels) highest value > .80**  
begin looking on the Photo shown in the Point Table  
column " Photo Largest Residual "  
**This may also be used if Tightness (in.) is >.04 once**  
**Largest Residual has been reduced to <.80.**

E-mail – [support@etemplatesystem.com](mailto:support@etemplatesystem.com)

For Technical Support on your projects, upload a "Zipped" file  
containing your .pmr and photos to

[www.filesdirect.com/ETPHOTO](http://www.filesdirect.com/ETPHOTO)



## ETEMPLATE PHOTO USERS INTELLI-FAQs

### ANGLE MAXIMUMS

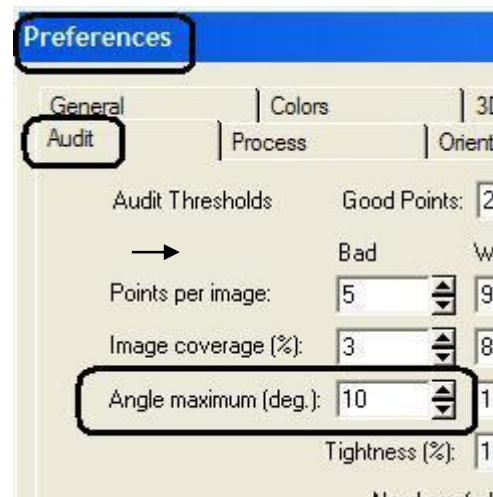
**Q:** I've completed a project and the values are within the necessary limits, but when I view my project with the 3D viewer, there are some points missing. I tried exporting the point set and then imported or opened it in my CAD software to complete the template drawing. The same points are not there that also were missing in my 3D view in ETPhoto. WHY?

**A: AUDIT tab - ANGLE MAXIMUM (deg):**

**Bad set to 10**

If you would like to have it show up in your exported point set, you can go to the pull down menu **OPTIONS | PREFERENCES | AUDIT** tab and change the setting for the **ANGLE MAXIMUM (deg): Bad** from 10° to 5° to enable ID points with angles between 5° and 10° to be exported. This setting is made default for ETP2 because minimum angles in a project should be at least 30° --

almost every project will have some angles under 30° but ones under 15° have a lower confidence level of accuracy. The user must determine if the point(s) is necessary for template creation; what needs to be done to create the template as accurate as possible. Does the Bad Angle Maximum setting need to be dropped to allow all the points in a particular project to be exported, or can a template be created without those lower angle points included in the set?



### PROCESSING WITH A DIFFERENT CAMERA

**Q:** OOPS!!! I selected the wrong camera's .cam file to process with! I thought the pictures were taken with one camera but they were really taken with another -- Is there anything I can do to fix it? How can I process with a different camera?

**A:** A completed project processed with an incorrect camera can have the camera file replaced and then be reprocessed, taking care to double check all Quality Assessments for accuracy. These are the steps:

***Replacing an incorrect .cam file used to process a set of project images with the correct .cam file and reprocessing***

1. **Locate** the correct/latest **.cam** file necessary for processing
2. Click **Project | Cameras**
3. Click **Load** | select a new **.cam** by navigating to the needed cam file in the **Choose a camera** dialog box | click **Open**
4. Select the new **.cam** file from the list | click **Set Default**
5. Click **Close**
6. Go to **Photo Control** on the left | click **Select All** photos
7. Right mouse click in the photo thumbnails for menu choice **Properties of Selected Photo**
8. Select the proper **.cam(default)** file | Click Apply | Click **OK**
9. **Project | Cameras** | select incorrect **.cam** | Click **Remove** | Click **Close**
10. **Save**
11. **Process** – note **Total error Log value of goodness** to the *right of the colon*
12. **Open a Point Table and check the Quality Assessments** [highest **Tightness(in.)** value and highest **Largest Residual** values]

---

**WARPED OR INCORRECT MODEL**

**Q:** My 3D model looks warped or like it has some points that seem to be in the wrong 3D location.

**A:** Poor model shape usually results from one or more points that have been incorrectly located by ETemplate in 3D space. Points that are improperly or inaccurately placed can be the result of any of the following:

1. The point has one more incorrect references.

To determine if a point is incorrectly referenced, find one marked version of the point on a photograph, select it and choose "Point Audit Selected" from the Referencing menu. Review where the point appears on all photographs. If it is incorrect, fix it by unreferencing it and then referencing it correctly.

2. The point has been marked inaccurately in one or more photographs. Review all markings on all photographs of the questionable point. Zoom in and make sure point has been marked correctly.

3. The point has been marked on only two photographs.

If a point is marked on only two photographs (which you would have determined in step 1 above) it will not be as accurate as if it were marked in three or more. Try to find the same physical point in other photographs in the project to mark and reference it there or add more photographs to the project and mark all visible points on the new photographs.

4. The point has a poor angle maximum (lower than 10 degrees).

Point Audit will show you if the point in question has a low angle maximum (i.e. the rays of light from the point to the images it appears on are too close together to get an accurate position in 3D). To fix this, the point must be marked and referenced on another photograph that is from a quite different view than the current photographs it is marked on.

5. There are too many points which are imaged on just two or three photographs.

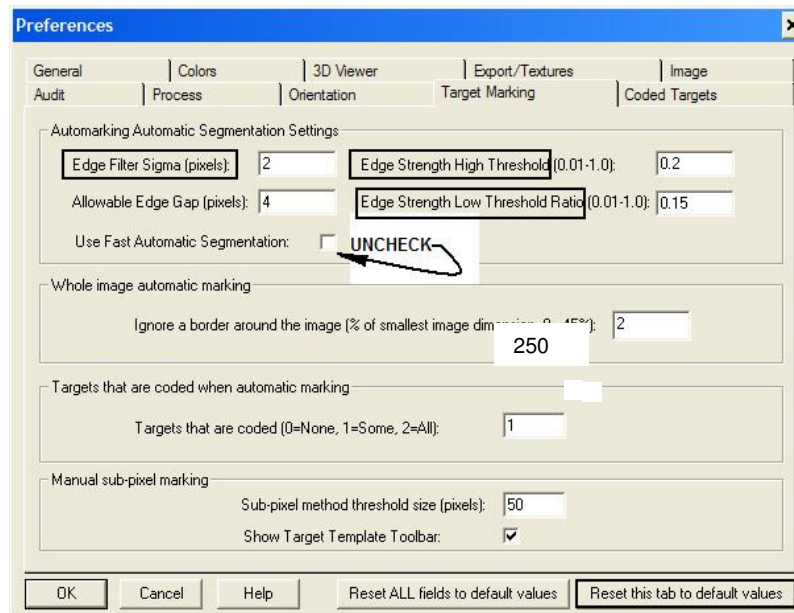
The Audit Dialog shows how many points have only two rays. If there are too many of these (over half the total points) then overall the model could be quite inaccurate. Try to add photographs to the project so more points are marked on three or more photographs.

6. There are sets of photographs that share many points between themselves but share few points with other sets of photographs in the project.

A careful review of the project through point audit will show if there are groups of photographs that share common points but do not share many of these points with other photographs in the project. When some photographs share few points with other photographs in the project, they become disassociated and form a little model unto themselves. In other words, the points shared by the set of photographs could be quite accurate internally but might be in the wrong location or orientation relative to other parts of the complete 3D model.

# FILTERING OR SMOOTHING IMAGE NOISE OF PHOTOS

If a project seems to have an image take longer than necessary to appear on the screen, during the Automated Coded Target ETemplate Project Wizard, it is possible to modify the filtering or smoothing of “image noise.” Following is a screen shot, and the order of steps regarding Target Marking Preferences that may be modified in order to try to get better results.



## STEPS to modify Target Marking Preferences

ETemplate > Options > Preferences > Target Marking tab

1. Edge Filter Sigma: 2.2  
Edge Strength High Threshold: 0.3  
Edge Strength Low Threshold: 0.2  
Try running the project again. If this does not help, try Step 2.
2. Edge Filter Sigma: 2.5  
Edge Strength High Threshold: 0.4  
Edge Strength Low Threshold: 0.3  
Try running the project again.

Please note:

- As these values are set larger in each step, the total quantity of automatically marked points may be slightly reduced. If desired, reset the settings to the default Target Marking Preferences by clicking “Reset this Tab to Default Values”  
*NOTE: “Sub-pixel method threshold size (pixels):” must be manually set to 250*
- If *not* resetting the preferences to the default values, we recommend using step 1 values as primary preference settings and use step 2 values as needed
- “Use Fast Automatic Segmentation” should remain Unchecked in any case

## Reference Checker

The Reference Checker is a new feature that can be used for checking for mismatched point references. Since the correctness of point references are key aspects in multi-photo projects, this feature can considerably improve the overall accuracy, quality and robustness of your projects.

The Reference Checker can optionally run automatically as one of the pre-processing stages (i.e. before the Processing Dialog appears).

The Reference Checker depends on the Project Marking Quality setting found in the Project Information dialog. A Project Marking Quality of -1.0 turns the Reference Checker off. A Project Marking Quality of 1.0 turns the Reference Checker on.

The concept behind the Reference Checker is to check photographs pair wise to determine if any points appear to be misreferenced or mismatched. There are situations where this cannot be determined, for instance if a pair of photos has fewer than 9 correctly referenced points between them.

The Reference Checker has a second stage that runs after Processing is complete. The second stage of the Reference Checker renames, unreferences, or sets marks to 'do not use' if a problem has been able to be determined. What action the Reference Checker takes depends on the options set in the Processing dialog box. This second stage does not run if the first stage did not find any problems or the first stage did not run for some other reason.

The results of the second stage are displayed in the Project Status Report and the message looks similar to this:

"Problem: Points were automatically unreferenced/renamed/set to 'do not use' after processing because they had residuals larger than the current Project Marking Quality of <p> pixels. <list of points>

Suggestion: High point marking residuals are a result of mis-marking or inaccurate marking, mis-referencing and/or poor camera orientation. Review problem points and remark and/or re-reference where required. "

If problem points have been unreferenced in this stage you may consider reprocessing the project for maximum accuracy and to see if any other points are identified by the Reference Checker.

**Note:** To reverse the changes made by reference checker during processing, use the Undo Process tool before making any other changes.





## ETEMPLATE PHOTO 2 INSTALLATION INSTRUCTIONS

Insert the **ETemplate Photo V2.3** CD-ROM disc into your CD drive and view the contents with Windows Explorer as shown in figure 1 below.

Double click the left mouse button on **Setup.exe** [ 1 ] and follow the onscreen instructions.

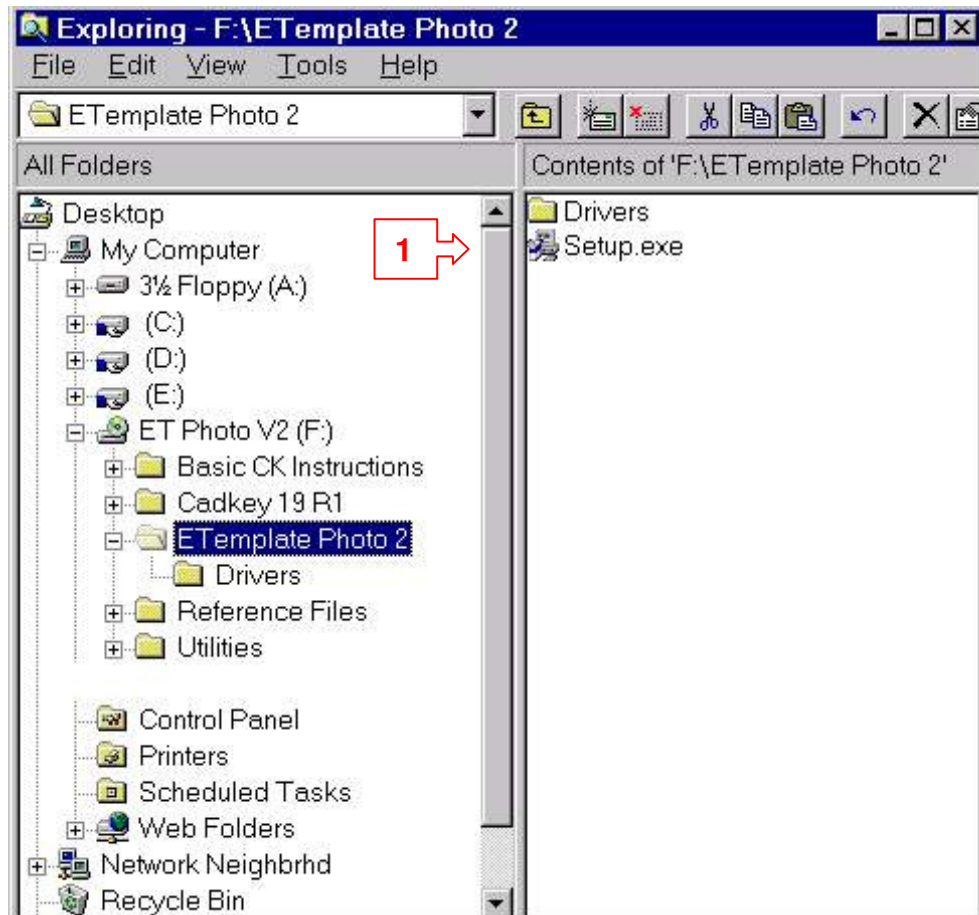


fig. 1

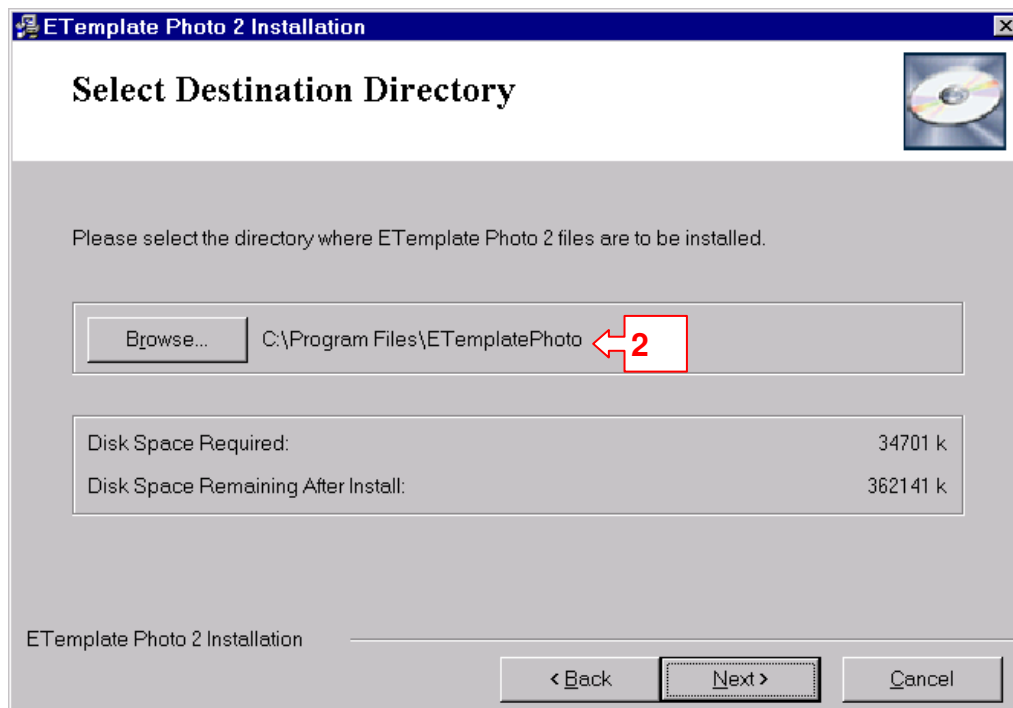
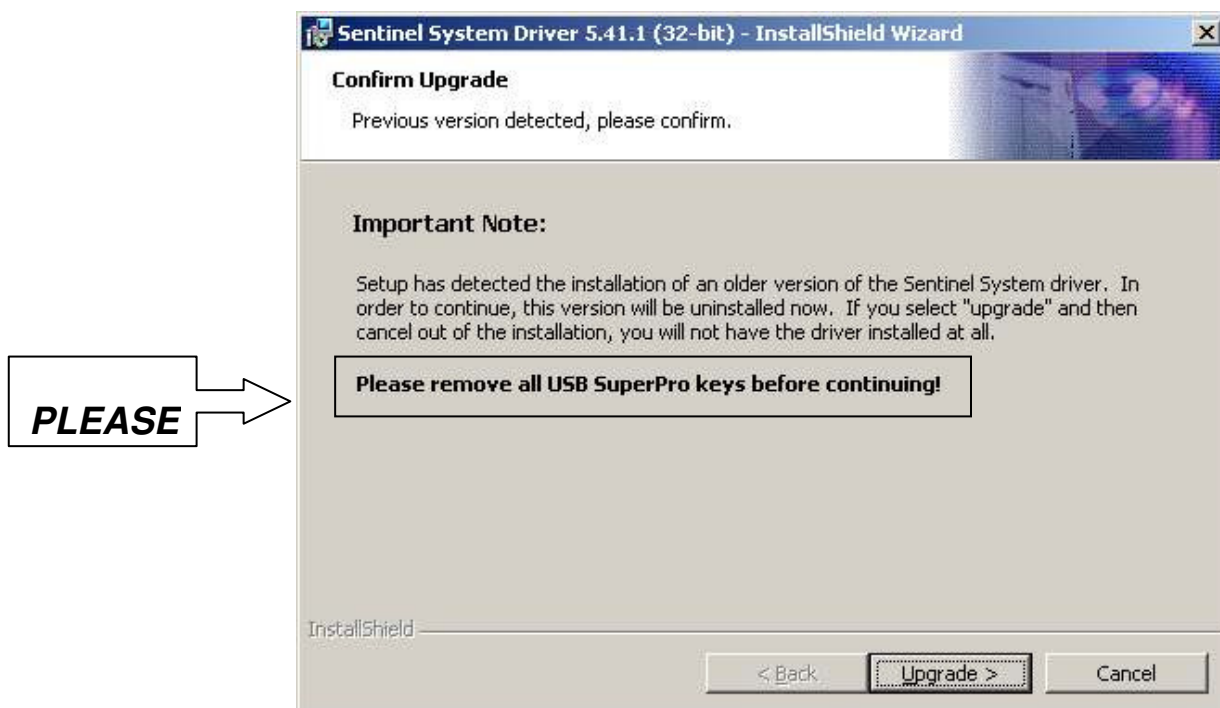


fig. 2

The destination path C:\Program Files\ETemplatePhoto is correct. **Click Next.**  
**Let the installation finish.**

**For current maintenance customers or users with ETemplate Photo 1 thru 10g installed on the same computer, if the following screen is encountered during the installation, click on Upgrade and continue.**



Continue to let the installation wizard finish.

Please note: Some graphics cards can cause conflicts with ETemplate Photo because of their specialized graphics acceleration. If you are experiencing problems, please change the setting in Control Panel/Display/Settings/Advanced for hardware acceleration. This can be gradually reduced from full to none until the problem is resolved.

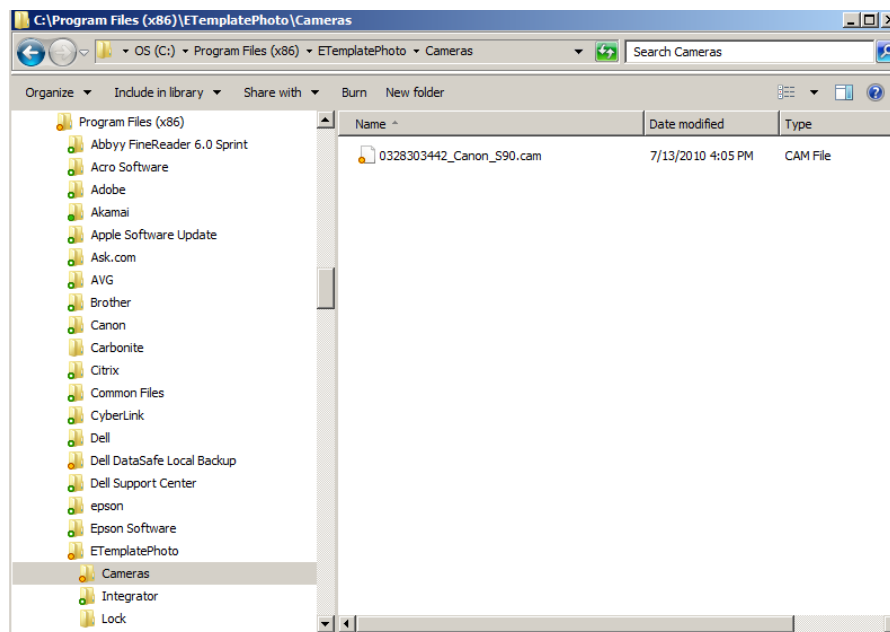
---

## ***Installing the Camera Calibration File***

### **Saving your CAM file**

Create a folder in the C:\Program Files\ETemplatePhoto folder named “Cameras”.

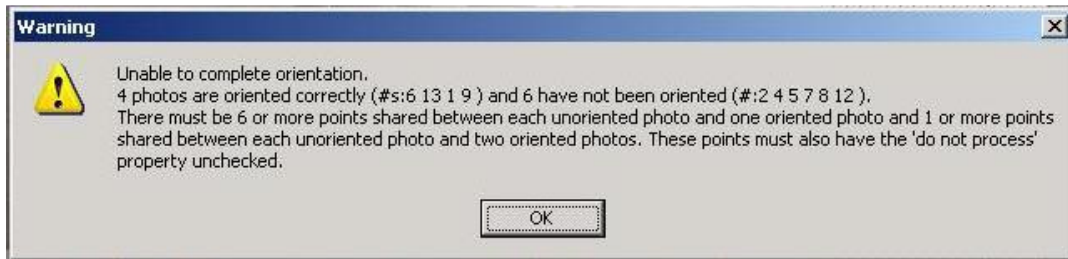
Copy the .CAM file(s) from the “Utilities” folder on ETemplate CD and paste into new “Cameras” folder.



Your ETemplate Photo settings file (i.e. 0328303442.ini) will also be saved here.

## EXCEPTION HANDLING

The automatic processing may encounter exceptions. You are alerted when manual processing may be required. Remember you always have that option.



This common issue can be corrected using existing processing techniques:

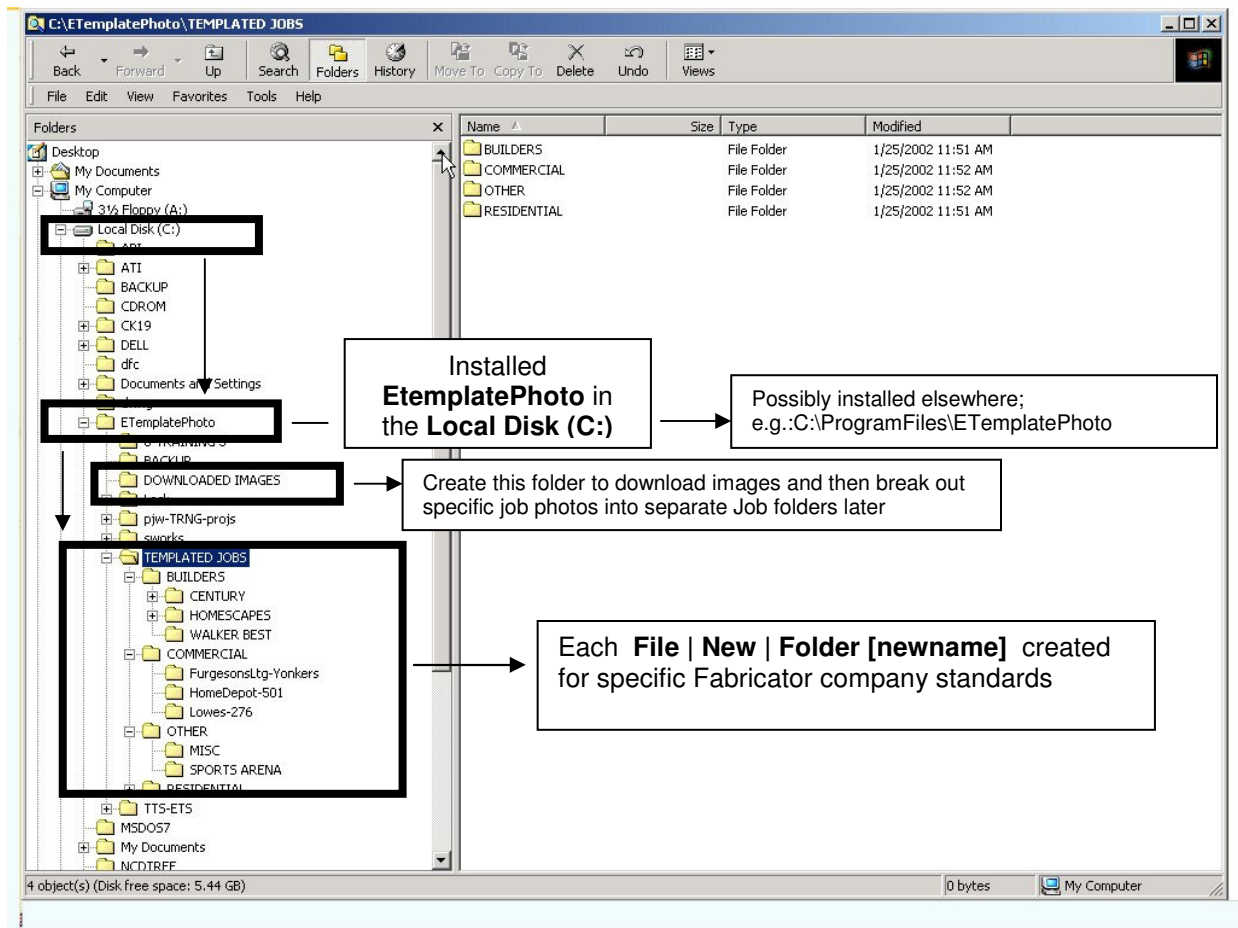
- **Not enough points overlap between photos**  
Look at photos for additional marks that can be manually marked or add additional photos that may provide more overlap. Mark, reference, and re-process.
- **Points are missed by the automatic marking**  
At times an Intelli-Mark will be mis-identified. This may cause a mis-reference of the marks. This should be easily seen and fixed through the final process value and the point table. The largest residual is the quickest method for finding the errant target. Simply select the incorrect point, right click and select "un-reference selected". Please note: Objects in a room also have the possibility of being interpreted as a target. If this happens, use the visual check of photos or the point table to correct.

<b><i>Intelli</i> – Mark Numbering Scheme</b>	
<b>Number</b>	<b><i>Use</i></b>
1 – 24	<b><i>Intelli</i></b> – Marks provided on card stock for automatic referencing or extra marks
25 & 26	<b><i>Intelli</i></b> – Marks: First Scale Points
27 & 28	<b><i>Intelli</i></b> – Marks: Second Scale Points
29 & 30	<b><i>Intelli</i></b> – Marks: Third Scale Points
31 - 50	Set "A" <b><i>Intelli</i></b> – Mark Edge Markers
51 - 70	Set "B" <b><i>Intelli</i></b> – Mark Edge Markers
71 – 140	<b><i>Intelli</i></b> – Mark Wall Markers (Self Adhesive on Roll) 18 sets on a roll or 1260 total (Don't duplicate numbers in same job)
141-161	Reserved for future use (These may be printed on card stock for extra marks)
1 - 161	Complete set of <b><i>Intelli</i></b> – Marks provided in .pdf file with system

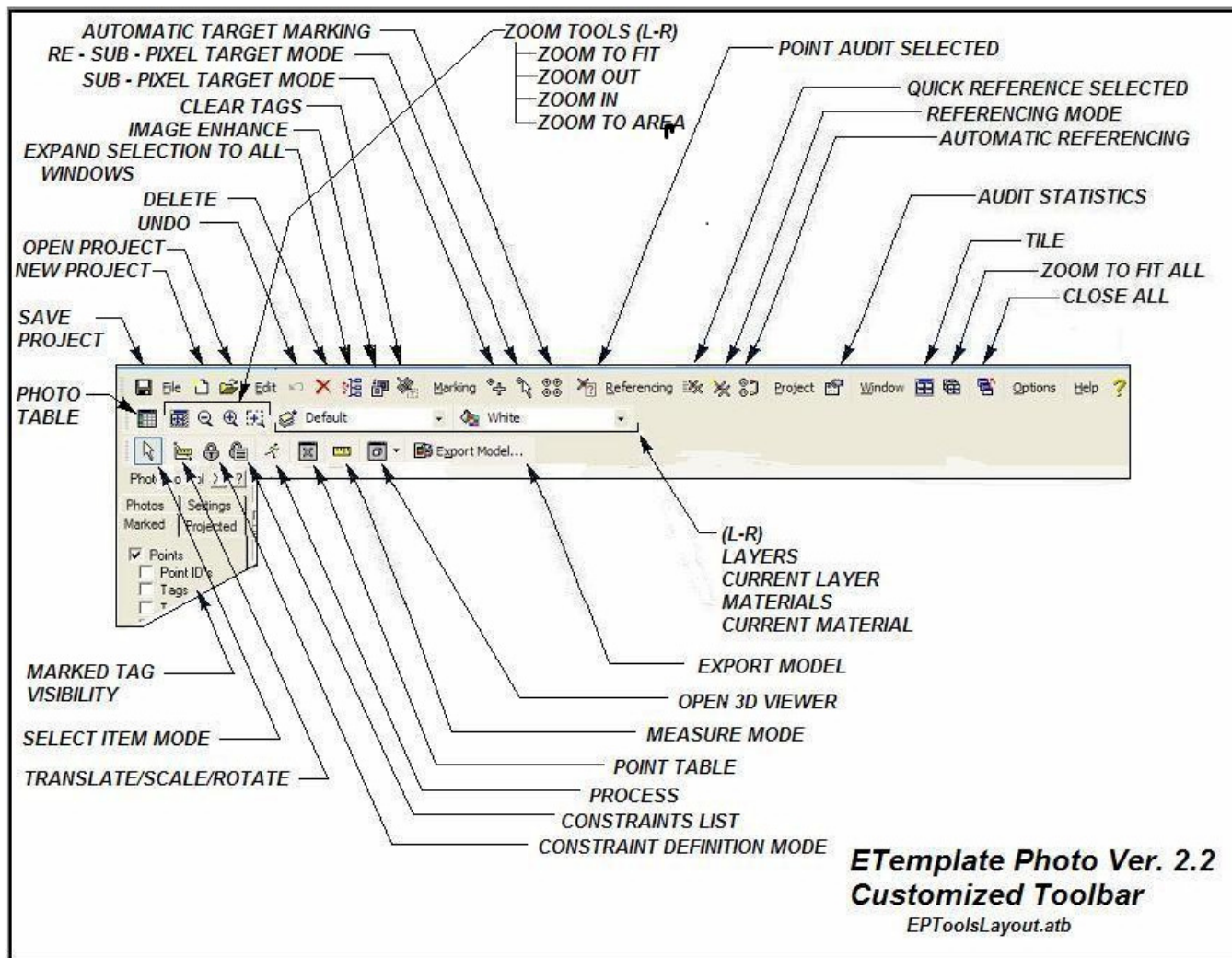
## Downloading Photos and Starting an ETemplate Project

- Open **Windows Explorer** and create a new folder for jobsite project
- Plug USB cable into camera and computer (or insert SD memory card into card reader)
- Using Windows Explorer – copy desired photos from camera by using copy & paste, or drag & drop to folder created in Step 1.
- When finished – if using USB connection – Left click **STOP/EJECT Hardware** icon in lower right section of status bar to disconnect camera.
- Open ETemplate Photo
- Click **File> New Project** to start the ETemplate Photo Project Wizard.

### File Naming Examples for managing ETemplated Projects in Windows Explorer [ right mouse button click **Start | Explore** ]



**FILE or FOLDER names** a user might choose to create for managing and navigation to Jobsite photos with ETemplate Software



## DEFINITIONS

Pixels	<i>A measurement of the smallest “dot” that can be displayed on a computer screen. Computer monitors display 72 pixels per inch, so 1” = 72 pixels.</i>
Residual	<i>A residual is an amount of difference between an expected and calculated value. For example, if you expected a certain measurement to come to 2.55mm but the actual final result was 2.52mm the residual (or residual error) would be 0.03mm.</i>
Resolution	<i>A measure of the smallest “feature” that can be resolved by an instrument. In photography, the measure of resolution relates to the distinguishing of two black bars. As the bars get closer and closer together in the digital image, they get increasingly difficult to separate. Eventually they look like one bar and not two. The point at which they just turn from looking like two bars to looking like one bar is called the resolution of the imaging system.</i>
Resolution	<i>There are several types of resolution: bit resolutions (or bit depth), monitor resolution, image resolution, and output resolution. In addition, there are two terms used to define the various resolutions you’ll need to reproduce an image: pixels per inch (ppi) and dots per inch (dpi).</i>



Bit Resolution	<i>The amount of color information in each pixel. Designated in pixels per inch (ppi).</i>
Monitor Resolution	<i>The number of picture elements displayed on a monitor – usually 72 pixels per inch (ppi). If your image has a higher resolution than the monitor's resolution, the image will appear larger than when it is printed.</i>
Image Resolution	<i>Image resolution refers to any stored pixel information (pixels per inch), such as that recorded by a digital camera or a program like Adobe Photoshop. Scan resolution, the ppi recorded at the scanning stage, is another type of image resolution.</i>
Output Resolution	<i>The number of dots per inch your output device produces. Devices such as printers use tiny dots to represent type, line art and continuous tones.</i>
Camera Station	<i>A Camera Station is the location and orientation of a photograph at the time of exposure. Each photograph used in ETemplate Photo has a Camera Station (ie: position of the user when the photo was taken)</i>
.cch	<i>Photo Chip -- a scaled down version of a photograph used for indexing of the photographs. These cached .cch files (similar to thumbnails) are automatically created by the ETemplate Photo New Project Wizard to allow the system to work more efficiently with images.</i>
.cam	<i>The unique camera parameter file used to process photographs, in an ETemplate Photo project, that are taken specifically by the unique calibrated camera it was created from.</i>
.dxf	<i>The DXF file format is a data exchange standard that many CAD and rendering packages can import. The ETemplate Photo template output is a point set in DXF (or other allowable formats).</i>
.pmr	<i>The default file extension assigned to all saved projects in ETemplate Photo. "PMR" -- project modeling resources</i>
Coded Target	<i>A target that has a unique code ring around it that ETemplate Photo can automatically recognize. The software is able to automatically mark, recognize and reference each of these targets efficiently to save Processing time in a project.</i>
Sub-pixel Target Mark	<i>Marks placed accurately and consistently in ETemplate Photo, by a software study of the digital image data and the use of the Least-Squares Matching method.</i>
Referencing	<i>The process of telling ETemplate Photo that marks on two or more different photos represent the same physical object in space.</i>
Rotation	<i>Specifying the directions of the Left/Right (X), the Front/Back (Y), and the Bottom/Top (Z) axes for a Cartesian coordinate system (a set of 3 axes at right angles to each other) to be applied to the 3D locations in the solved model.</i>

**Suggested Point Table Configuration** – Click “Configure” and using ” arrows” move items from “Visible” to “Hidden” to match below. Change the order of items by moving “UP” or “Down”.

The screenshot shows the 'Point Table' window with a table of 107 points. A 'Configure Columns' dialog box is open, showing the 'Basic' configuration. The 'Visible' column list contains: Id, Photos, Largest Residual (pixels), Photo Largest, Tightness (in), Angle (deg.), #Constraints, Layer, Material, and Use In Processing. The 'Hidden' column list contains: Control Name, Frozen, Name, Precision Vector Length, RMS Residual (pixels), Tagged, Target Bits, Target Code, Tightness (%), Type, X (in), and X Precision.

Id	Photos	Largest Residual (pixels)	Photo Largest	Tightness (in)	Angle (deg.)	#Constraints	Layer	Material	Use in Processing
65	1,4,5,22	0.417178	1	0.021631	40 510926	0	Default	White	yes
66	1,4,5,22,23	0.249776	4	0.011748	47 887091	0	Default	White	yes
67	1,22,24	0.143691	1	0.008995	73 024715	0	Default	White	yes
68	1,3,18,19,23,24...	0.384644	8	0.012435	89 461439	0	Default	White	yes
69	3,10,19,23,24,25	0.201044	9	0.000501	02 972401	0	Default	White	yes
70	1,4,5,6,7,20,21	0.836369	1	0.038405	85 874729	0	Default	White	yes
90	3,18,19,24	0.335944	3	0.017326	21.7835	0	Default	White	yes
91	1,3,18,19,24,25	0.316002	24	0.010656	76 360243	0	Default	White	yes
92	1,3,18,19,23,24...	0.305243	24	0.012057	84 812277	0	Default	White	yes
93	1,3,18,19,22,23...								yes
94	1,3,18,19,22,23...								yes
95	1,3,18,19,22,23...								yes
96	1,3,22,23,24,25								yes
97	1,4,22,23,24								yes
98	1,4,20,22,23,24								yes
99	1,4,5,20,22,23								yes
100	1,4,5,20,22								yes
101	1,4,5,20,22								yes
102	1,4,5,20,22,23								yes
103	1,4,5,20,22,23								yes
104	1,4,5,20,23								yes
105	1,4,5,20,23								yes
106	4,5,6								yes
107	1,4,5,6,20,21								yes

**Photo Table Configuration** – Column width is the only change to Basic

The screenshot shows the 'Photo Table' window with a table of 6 photos. A 'Configure Columns' dialog box is open, showing the 'Basic' configuration. The 'Visible' column list contains: Photo #, Image Chip, Description, Processing, Can be Processed, Oriented, Image Width (pixels), Image Height (pixels), Camera, Largest Residual (pixels), # Marks, # Referenced Points, and # Sub-Pixel marks. The 'Hidden' column list contains: Quality, Inverse Focal Length, Inverse Principal Point, Inverse Format Aspect, Rotation (deg.), Center X (in), Center Y (in), Center Z (in), Omega (deg.), Phi (deg.), Kappa (deg.), and Target X (in).

Photo #	Image Chip	Description	Processing	Can be Processed	Oriented	Image Width (pixels)	Image Height (pixels)	Camera	Largest Residual	# Marks	# Referenced	# Sub-Pixel marks	Camera's Eff Focal Length	Photo's Eff Focal Length
1	IMG_0009	Use and adjust	yes	yes	2592	1944	1121209170 S80	0.16273	22	22	22	5.8	5.8	
2	IMG_0010	Use and adjust	yes	yes	2592	1944	1121209170 S80	0.156992	23	23	23	5.8	5.8	
3	IMG_0011								23	23	23	5.8	5.8	
4	IMG_0012								22	22	22	5.8	5.8	
5	IMG_0013								26	26	26	5.8	5.8	
6	IMG_0014								21	21	21	5.8	5.8	

## ETemplate Warranty and Return Policy

ETemplate Photo provides a standard product warranty. Should a question arise concerning the use of ETemplate, this warranty details the processes that will be used to determine whether the product is performing to its technical specifications.

If, in the first thirty (30) days after training/delivery, ETemplate Photo consistently measures outside of the stated industry tolerance of  $\pm 1/8$ " over a distance of 12 feet, the following process shall be used to determine product conformance.

1. The photos and project file from the job shall be sent to ETemplate Systems for review. The photo quality will be examined and if there are any recommendations for changes in picture taking processes, they will be noted and returned to you.
2. If the photo quality is good, the project will be reviewed for correctness. Any processing errors will be corrected, reprocessed, noted and returned to you.
3. If the two above corrective actions do not resolve the issue, we will overnight a loaner camera to you. You then ship your camera to ETemplate Systems for re-calibration and testing. If the camera is functioning properly, a test measurement of a 150" length standard will be performed and used as the final determination of system performance. These results will be provided to you. If the camera is not functioning properly, it will be returned to the manufacturer for repair. ETemplate Systems will then re-calibrate and test the camera as stated above.
4. If the test results from step 3, above, show ETemplate Photo to measure outside of its stated tolerance, the system may be returned for a full refund.

## SHORTCUT KEY REFERENCE

File Menu	
New Project	Ctrl+N
Open Project	Ctrl+O
Save Project	Ctrl+S
Save As Project	Shift+Ctrl+S

Edit Menu	
Undo	Ctrl+Z
Delete Selected Items	Del
Enter Select Mode	1
Select All in Active View	Ctrl+A
Expand Selection to all Windows	W

Marking Menu	
Enter Sub-pixel target sub-mode	S

Referencing Menu	
Enter Reference mode	R
Quick Reference	Shift+Q
Unreference selected items	Ctrl+U
Point Audit Selected	Q

Project Menu	
Process	F5
Audit	Shift+F5
Constraint Definition mode	C
Measure mode	M

Display Menu	
Tag Selected Items	T
Clear Selected Tags	Shift+T

Window Menu	
Tile Windows	F12
Close All Windows	F4
Zoom to Fit	F
Zoom to Fit all Photos	Shift+F
Enter Zoom In mode	I
Enter Zoom Out mode	O
Enter Zoom Area mode	U
Zoom Previous	Y
Enter Pan mode	P

Non-Menu Keys	
End current operation <i>OR</i> Skip Point in Referencing mode	ESC
Zoom in photo (or 3D viewer) under cursor	+
Zoom out photo (or 3D viewer) under cursor	-
Bring up temporary zoom window	ALT
Enter into temporary zoom-area, pan mode.	CTRL

Numbers and Letters, In Order	
1	Enter Select Mode
2	Enter Mark Point Mode
Ctrl+A	Select All in Active View
C	Constraint Definition mode
D	Enter Region Select mode
F	Zoom to Fit
Shift+F	Zoom to Fit all Photos
I	Enter Zoom In mode
M	Measure mode
Ctrl+N	New Project
O	Enter Zoom Out mode
Ctrl+O	Open Project
P	Enter Pan mode
Q	Point Audit Selected
Shift+Q	Quick Reference
R	Enter Reference mode
S	Enter Sub-pixel target sub-mode
Ctrl+S	Save Project
Shift+Ctrl+S	Save As Project
T	Tag Selected Items
Shift+T	Clear Selected Tags
Ctrl+U	Unreference selected items
U	Enter Zoom Area mode
W	Expand Selection to all Windows
Y	Zoom Previous
Ctrl+Z	Undo

Function Keys	
F1	Open Help File
F4	Close All Windows
F5	Process
F6	Open a Photo Table
F7	Open a 3D Viewer
F8	Open a Point Table

# Process Center: Overview

The Process Center has two functions:

- 1) It exports the processed ETemplate results to a specified design file format
- 2) It can project the wire frame line design from the complete .dxf file back into the photos from which it was exported.

The export function differs from the Export Model process in ETemplate in that you can preset defaults in the Process Center such as layers, line drawing, offsets, overhangs, corner radius and others. These defaults can be set and will remain set from project to project, unlike Export Model which requires that you set parameters fresh with each project. At the same time, the Process Center allows easy access to change any defaults to suit individual aspects of any project.

The Integrator, Settings, Points Definitions and Layer Definitions tabs are all involved with the export process.

The **Integrator** tab sets the file type of the exported file and includes three settings that will draw lines connecting the points in your exported file as per you set instructions. It will also export just points or points with layers.

The **Settings** tab lets you set and change particular aspects of each file you export.

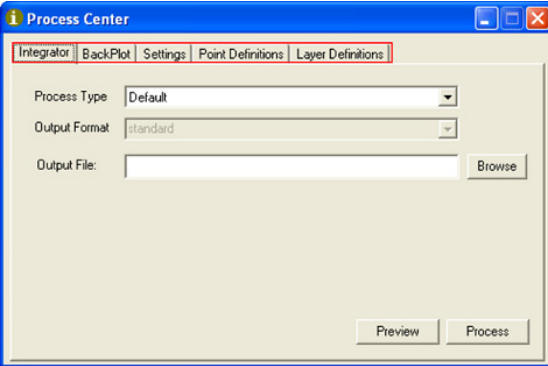
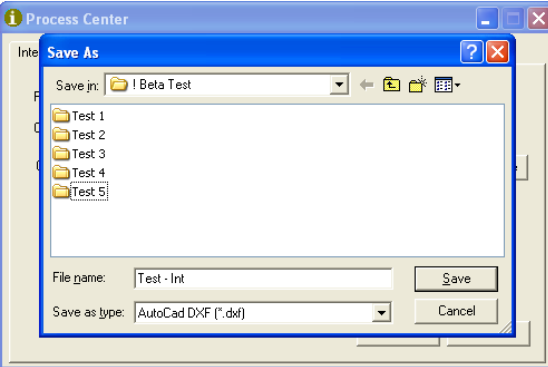
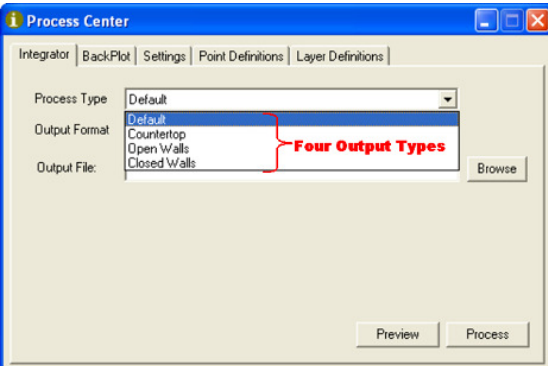
The **Points Definitions** tab informs the drawing function which points are involved in the perimeter drawing process by category.

The **Layer Definitions** tab allows you to set layers for points and leave them set unless you need to change them for an individual project.

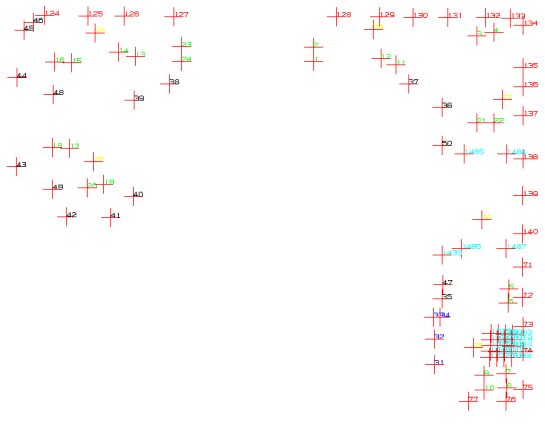
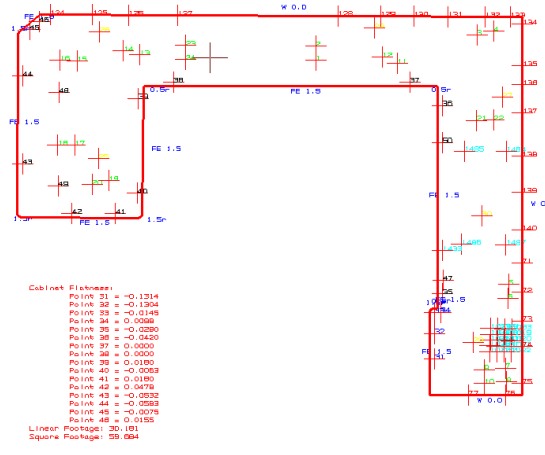
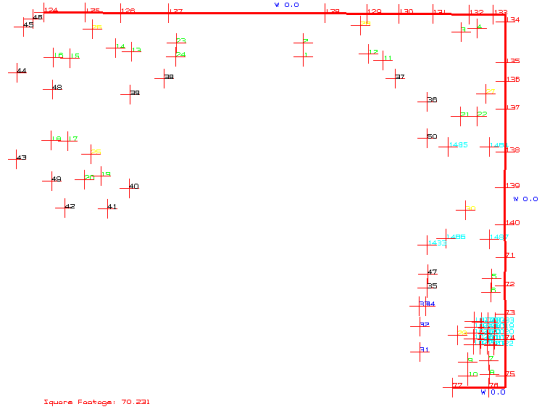
The **BackPlot** tab allows you to project the complete lines from your design file back into the project photos in order to make final checks of your template prior to fabrication.

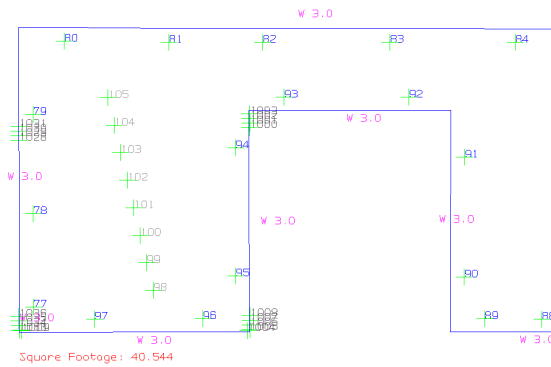
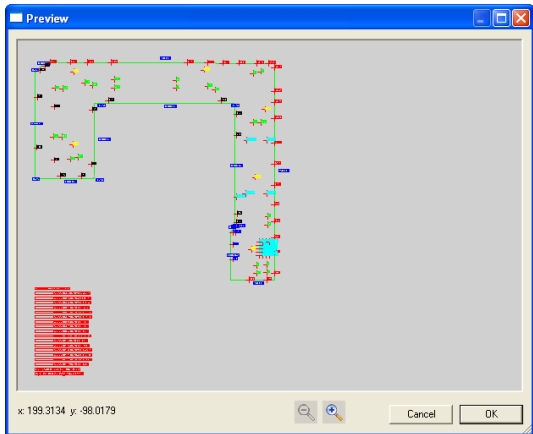
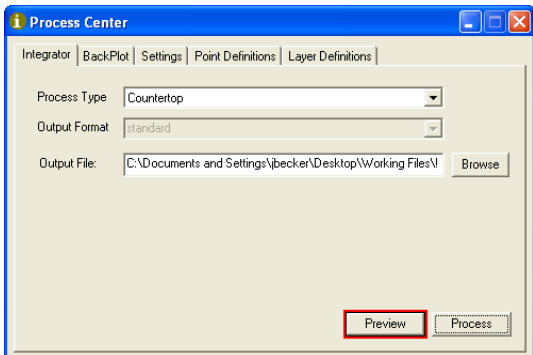

**(All of the tab functions will be discussed in detail on the pages that follow.)**

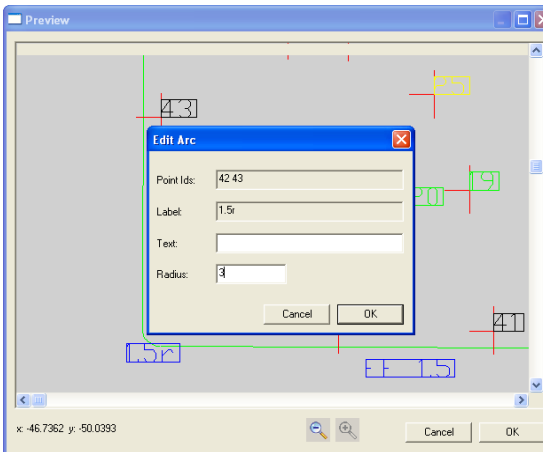
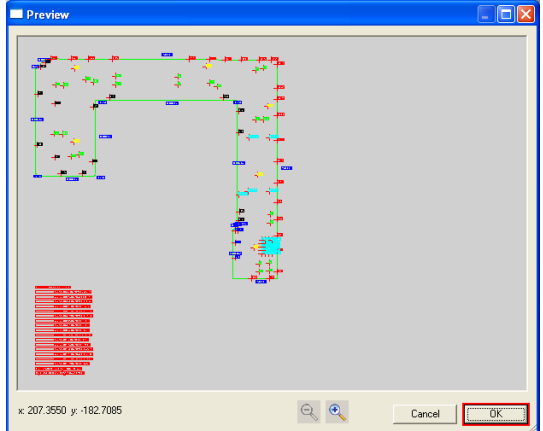
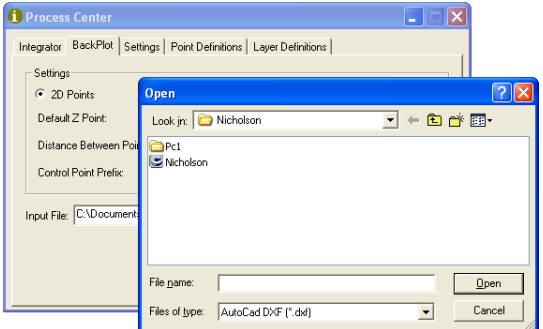
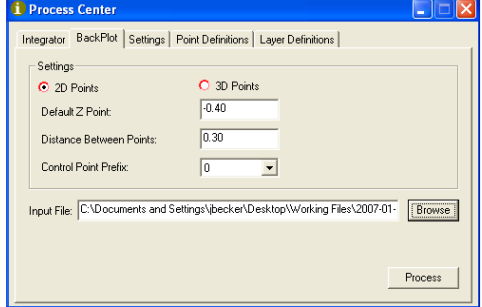
# Process Center

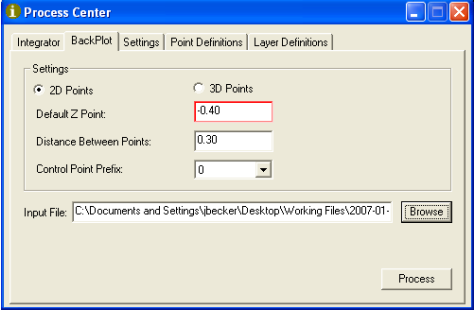
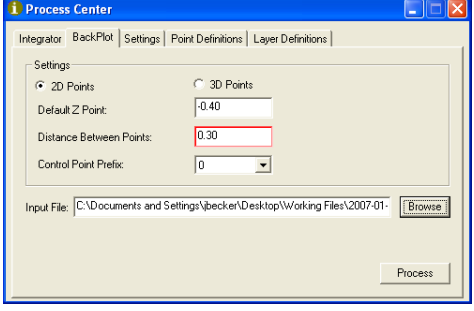
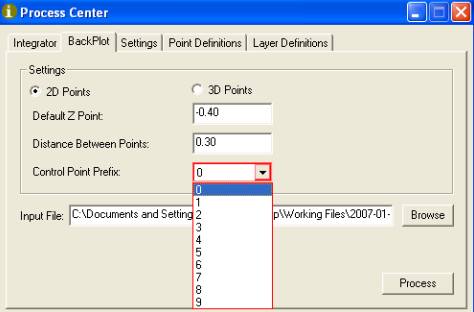
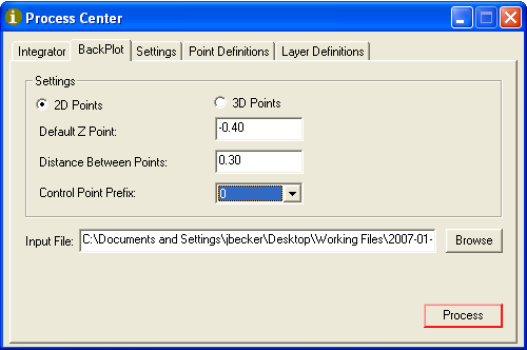
Integrator	BackPlot	Settings	Point Definitions	Layer Definitions
	<p align="center"><b>Read entire Process Center Section before using this tool</b></p>			
1	<p>The <b>output file</b> must be designated. Select the <b>Browse</b> button, give the output file a name</p>			
2	<p><b>Process Type</b> has 4 functions:</p> <p><b>Default</b> - produces point sets.  <b>Countertop</b> - produces countertop drawing.  <b>Open Walls</b> – produces an open loop drawing of just the walls.  <b>Closed Walls</b> – Produces a closed loop drawing of a room or wall</p>			

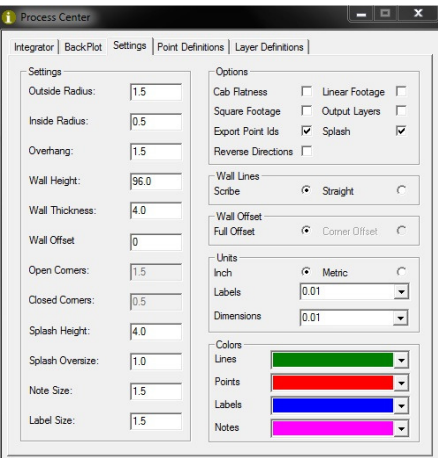
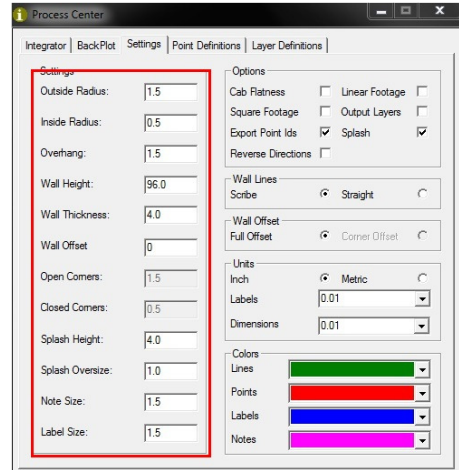


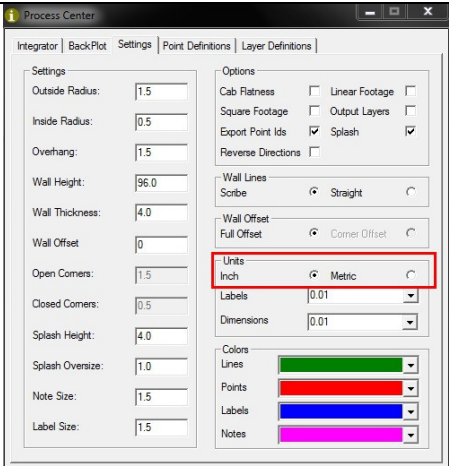
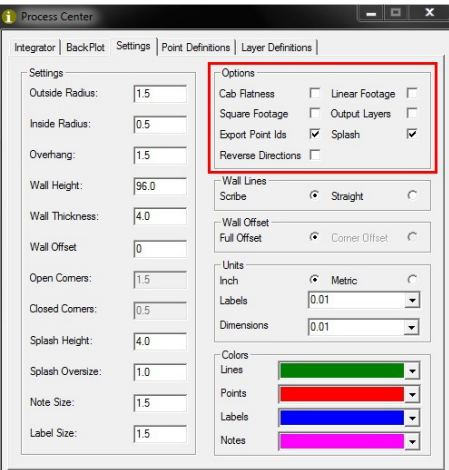
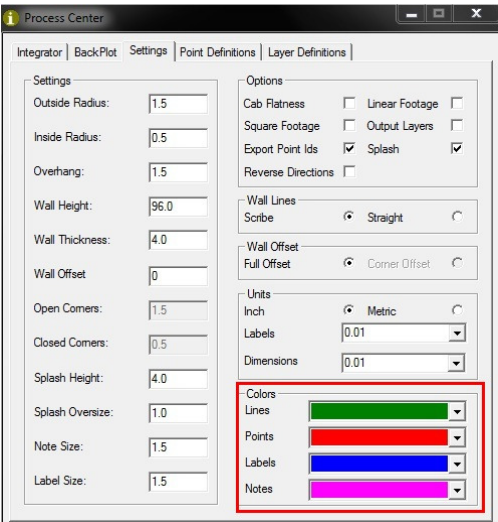
2A	<p><b>Default Point Set Example</b></p>	
2B	<p><b>Countertop Example</b></p> <p>If the lines involved in the perimeter drawing are not correct check the point definitions tab to see if the points are defined according to the instructions under the Point Definition Tab.</p> <p>If the default parameters of the drawing are incorrect, such as radius, overhang, wall offset, etc; check the setting tab.</p>	 <pre> Cabinet Footnotes: Point 31 = -0.1214 Point 32 = -0.1204 Point 33 = -0.0148 Point 34 = 0.0288 Point 35 = -0.0288 Point 36 = -0.0420 Point 37 = 0.0000 Point 38 = 0.0000 Point 39 = 0.0190 Point 40 = -0.0068 Point 41 = 0.0190 Point 42 = 0.0478 Point 43 = -0.0232 Point 44 = -0.0563 Point 45 = -0.0078 Point 46 = 0.0155 Linear Footage: 59.181 Square Footage: 59.664 </pre>
2C	<p><b>Open Wall Example</b></p> <p>If the lines involved in the perimeter drawing are not correct check the point definitions tab to see if the points are defined according to the instructions under the Point Definition Tab.</p> <p>If the default parameters of the drawing are incorrect, such as radius, overhang, wall offset, etc; check the setting tab.</p> <p>Available output formats:  Standard DXF  Planit ORD Ver 2  <b>E</b>Template <b>D</b>esign <b>F</b>ile (EDF)</p>	 <pre> Square Footage: 70.221 </pre>

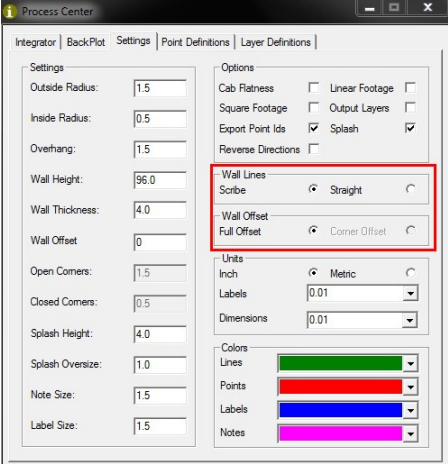
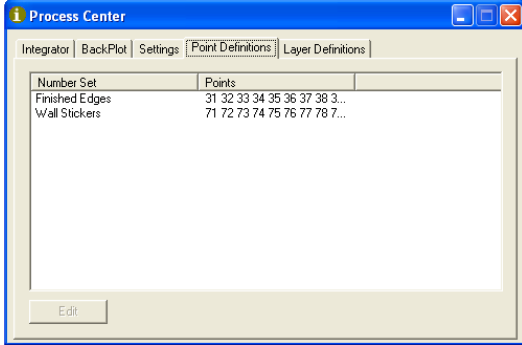
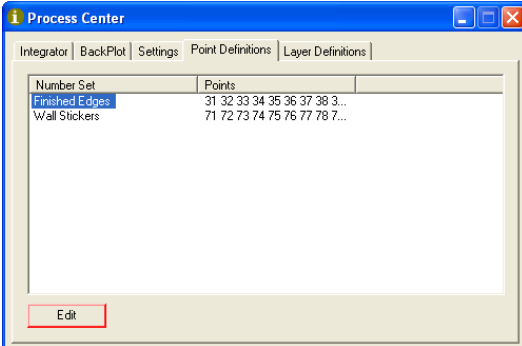
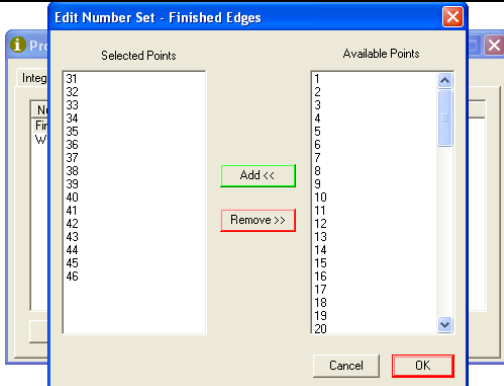
2D	<h3>Closed Wall Example</h3> <p>If the lines involved in the perimeter drawing are not correct check the point definitions tab to see if the points are defined according to the instructions under the Point Definition Tab.</p> <p>If the default parameters of the drawing are incorrect, such as radius, overhang, wall offset, etc; check the setting tab.</p>				
Integrator / Preview		BackPlot	Settings	Point Definitions	Layer Definitions
1	<p>Preview allows you to view and modify a CAD .dxf before exporting the file.</p> <p>Note: Preview cannot be used for ORD or EDF files.</p> <p>If export an ORD or EDF, or a preview of the dxf is not desired, select <b>Process</b> button on main <b>Integrator</b> tab.</p>				
2	<p>Select the <b>Preview</b> Button</p> <p>Note: If no preview is desired, select <b>Process</b> instead</p>				
3	<p>To zoom in or zoom out, select the zoom controls.</p>				

4	<p>By clicking on the labels that identify the drawing attributes, the drawing can be modified and changed.</p> <p>You can change these items:</p> <ul style="list-style-type: none"><li>• Overhangs</li><li>• Wall Offsets</li><li>• Radii</li><li>• Splash settings</li></ul>				
5	<p>Once complete, select OK to create your .dxf. Select cancel if you do not want to create a .dxf.</p> <p>Selecting OK bypasses the need to select the Process button.</p>				
Integrator		BackPlot	Settings	Point Definitions	Layer Definitions
1	<p>Specify the input file, <b>Browse</b> to the Input file.</p>				
2	<p><b>Choose 2D points</b></p> <p>(3D points is currently <b>not</b> used)</p>				

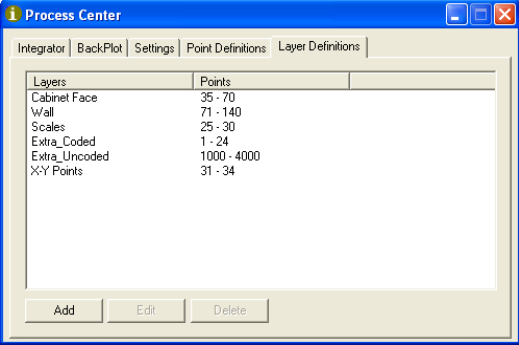
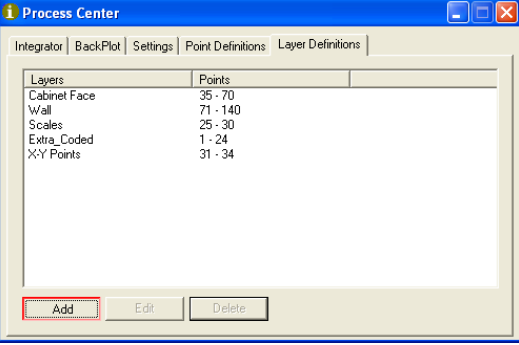
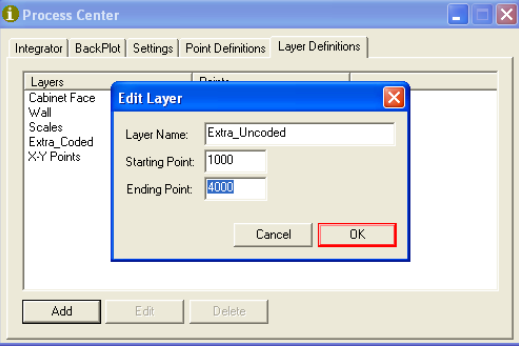
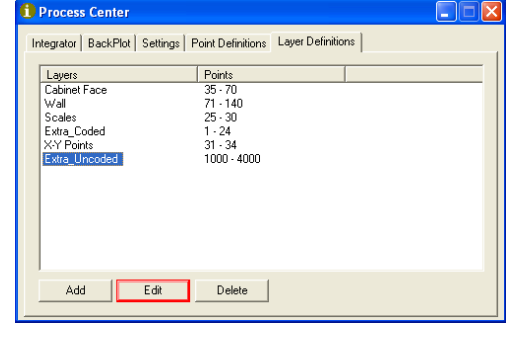
<p><b>3</b></p>	<p><b>Default Z Point</b> – allows you to define Z height where the 2D dxf profile will be plotted</p> <p>Z – Height can be used as a correction for the thickness of the edge marker used to determine cabinet height.</p> <p>Markers are .375 inches, if they are on a cabinet edge.</p> <p>A negative value of -.375 is applied. The number is rounded to -.40</p>	
<p><b>4</b></p>	<p>Distance between points <b>defines the resolution of the lines. A higher resolution results in a higher definition line.</b></p> <p>NOTE: Too much definition will keep a large project from being completely imported.</p>	
<p><b>5</b></p>	<p><b>Control Point</b> prefix is used when more than one or multiple projects are imported. If you do not use this prefix, the current project displayed will be overwritten.</p>	
<p><b>6</b></p>	<p>Select the <b>Process</b> button to export the dxf into ETemplate.</p> <p>Note: Do not press <b>Process</b> more than once.</p>	

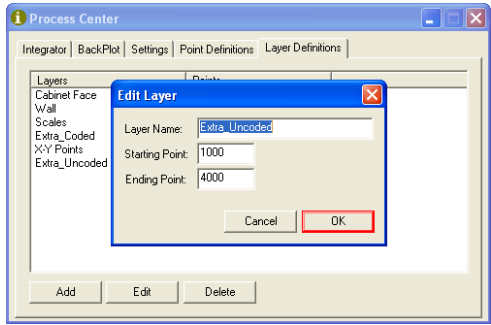
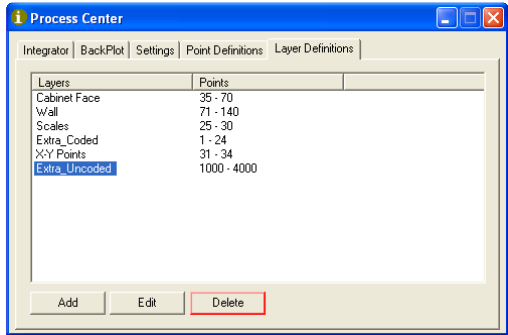
Integrator	BackPlot	Settings	Point Definitions	Layer Definitions
1	<p>All of the system configurations concerning the output of the systems can be changed using settings.</p> <p>There are several systems configurations that can be created. The following will describe what each function can accomplish in general terms.</p>			
2	<p><b>Settings Group</b></p> <p><b>Outside radius</b> – defines radius of external corners created by two finished edges.</p> <p><b>Inside Radius</b> – defines radius of internal corners created by two finished edges.</p> <p><b>Overhang</b> - defines overhand on finished edges.</p> <p><b>Wall height</b> – used when defining open walls for room design.</p> <p><b>Wall Offset</b> – backsplashes, wall cladding, room design, etc. Create wall lines for installation clearances and for radius of wall markers.</p> <p><b>Open corners</b> –This is the offset value for the exposed end of a wall line. When used, this is usually set to a very small value or to zero to minimize the gap between the countertop and the wall.</p> <p><b>Closed corners</b> – Offset value for the corner created by two walls meeting. This is set to a value that will create a gap small enough to be covered by the backsplash.</p> <p><b>Splash height</b> – Defines the height of the backsplash</p> <p><b>Splash Oversize</b> – Defines any oversize so that the splash can be cut to exact length at the job site.</p> <p><b>Note Size</b> – text height in the output CAD drawing</p> <p><b>Label Size</b> – text height in the output CAD drawing</p> <p>Note: If using metric – all values must be converted to mm</p>			

3	<p><b>Units</b> – projects can be set for Inches or metric (mm) measurement.</p> <p><b>Inch</b> – defines all notes, labels and dimensions to be presented in inches.</p> <p><b>Metric</b> – Defines all notes, labels and dimensions to be presented in mm</p> <p><b>Labels</b> – Lets the user determine the rounding value for all labels in either fractions or decimals.</p> <p><b>Dimensions</b> – Lets the user determine the rounding value for all dimensions in either fractions or decimals.</p>	
4	<p><b>Options</b> –information you want exported</p> <p><b>Cab Flatness</b> – Automatically creates a table of flatness of the cabinets, using the “z” height of the finished edge markers.</p> <p><b>Linear Footage</b> – Automatically calculates the linear footage of the finished edge of the countertop and creates an associated label.</p> <p><b>Square Footage</b> – Automatically calculates the square footage of the countertops and crates an associated label.</p> <p><b>Output Layers</b> – measurement points output to the DXF layers specified in the “Layer Definitions” tab.</p> <p><b>Export Point IDs</b> – creates the output in the DXF file.</p> <p><b>Splash</b> – automatically draw backsplashes for each wall, at the specified splash height, and the length of the wall. Drawn as a rectangular polyline.</p> <p><b>Reverse Directions</b> – For Open Wall data to a Planit ORD file or an ETemplate EDF file. Reverses the order of the output of the walls in case they are reversed in the software program trying to read them.</p>	
5	<p><b>Colors</b> – determines the color of the final CAD output, for entities and notes.</p>	

6	<p><b>Wall Lines</b> - typically for countertops</p> <p><b>Scribe</b> – the wall lines will be drawn through each point on the wall.</p> <p><b>Straight</b> – the wall lines will be drawn in a single straight line from corner to corner.</p> <p><b>Wall Offset</b></p> <p><b>Full Offset</b> – the entire wall line is offset a constant distance, as defined by the wall offset, either to the inside or outside.</p> <p>Corner Offset – Available only with straight wall lines. Each end of the line can have its own offset value, as defined b the open and closed corner values.</p>	
<div>Integrator</div> <div>BackPlot</div> <div>Settings</div> <div>Point Definitions</div> <div>Layer Definitions</div>		
1	<p>Point definitions are the points sets used to define walls and edges.</p> <ul style="list-style-type: none"><li>Walls are drawn as polylines.</li><li>Edges are line segments.</li></ul> <p>Multiple points are used for polylines. Edges require an even number of points. (Only 2 points per line segment).</p>	
2	<p>To edit point sets, select the set to be edited, and then select the <b>Edit</b> button.</p>	
3	<p>Use the <b>Add</b> and <b>Remove</b> buttons to change the set. Once complete, select the <b>OK</b> Button.</p> <p>Point numbers used to define the perimeter (wall and cabinet edge) should be in the <b>Selected Points</b> list to make them <b>active</b>. Any points regularly used for interior references, such as sink or stove top, and any used for high bars, as well as the X and Y markers should be in the <b>Available Points</b> list, making them <b>inactive</b>.</p>	



Integrator	BackPlot	Settings	Point Definitions	Layer Definitions
1	<p><b>Layers Definition</b> allows for control of point definitions, by point number, so that points can be easily defined when viewing them in CAD.</p>			
2	<p>To add a layer, select the <b>Add</b> button.</p>			
3	<p>Give the layer a name.</p> <p><b>NOTE:</b> AutoCAD users – do not leave a blank space in layer definitions. Use an underscore “_” if necessary.</p> <p>Select the point range to be defined on this layer. Once complete, select the OK button.</p>			
4	<p>To Edit a layer, highlight the layer, then select the <b>Edit</b> button.</p>			

5	<p>You may Edit the name of the layer or the point set defined. Once complete, select the OK button.</p>	
6	<p>To delete a layer, highlight the layer and select the delete button.</p>	

# Job Site Set-Up

Points must be set in a clock-wise direction in order for the auto draw portion of Integrator to work.

## Step 1: Set Wall Markers

(Left to Right)

Starting on the left most wall of the countertop, begin placing wall stickers in a clockwise manner. Do not skip any stickers. Proceed all the way to the end of the right most wall.

Note: It is perfectly normal to go from point 140 (end of sequence) to point 71 (beginning of sequence) in laying out wall markers. For example, if you start with the point 130 and get to point 140, proceed by making the next mark in the sequence 71.



## STEP 2: Set X-Y Points

Place your X1, X2, Y1, Y2 edge markers

Note: Although the XY markers are placed on the cabinet edges, they will not be used to measure the cabinet edges.



### STEP 3: Set Edge Markers (Right to Left)

Starting at the right most corner of the cabinets (where you placed your last wall sticker), begin placing your edge markers in sequential order, two per edge. Place in clockwise manner.



### Step 4: Place Your Scales/Constraints

Place your scales as usual.

